SONY

4-466-075-**11**(1)

Digital HD Video Camera Recorder

Operating Guide

Please also refer to :

http://www.sony.net/SonyInfo/Support/

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AVCHD Progressive

HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE

HANDYCAM

LITHIUM ION X TYPE

MEMORY STICK TM

micro SD XC

NAVTEQ MAPS

HDR-GW66E/GW66V/GW66VE/GWP88/GWP88E/GWP88V/GWP88VE

Read this first

Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. HDR-_____
Serial No. _____
Model No. AC-_____
Serial No. _____

The nameplate indicating operating voltage, trademark, etc. is located on the right side of main unit under the LCD screen.

WARNING

To reduce the risk of fire or electric shock,
1) do not expose the unit to rain or moisture.
2) do not place objects filled with liquids, such as vases, on the apparatus.

Do not expose the batteries to excessive heat such as sunshine, fire or the like.

CAUTION

Battery pack

If the battery pack is mishandled, the battery pack can burst, cause a fire or even chemical burns. Observe the following cautions.

- Do not disassemble.
- Do not crush and do not expose the battery pack to any shock or force such as hammering, dropping or stepping on it.
- Do not short circuit and do not allow metal objects to come into contact with the battery terminals.
- Do not expose to high temperature above 60°C (140°F) such as in direct sunlight or in a car parked in the sun.
- Do not incinerate or dispose of in fire.
- Do not handle damaged or leaking lithium ion batteries.
- Be sure to charge the battery pack using a genuine Sony battery charger or a device that can charge the battery pack.
- Keep the battery pack out of the reach of small children.
- Keep the battery pack dry.
- Replace only with the same or equivalent type recommended by Sony.
- Dispose of used battery packs promptly as described in the instructions.

Replace the battery with the specified type only. Otherwise, fire or injury may result.

AC Adaptor

Do not use the AC Adaptor placed in a narrow space, such as between a wall and furniture.

Use the nearby wall outlet (wall socket) when using the AC Adaptor. Disconnect the AC Adaptor from the wall outlet (wall socket) immediately if any malfunction occurs while using your camcorder.

Even if your camcorder is turned off, AC power source (mains) is still supplied to it while connected to the wall outlet (wall socket) via the AC Adaptor.

For customers in CANADA

RECYCLING LITHIUM-ION BATTERIES

Lithium-Ion batteries are recyclable.
You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.

For more information regarding recycling of rechargeable batteries, call toll free
1-800-822- 8837, or visit
http://www.rbrc.org/

Caution: Do not handle damaged or leaking Lithium-Ion batteries.

Battery pack

CAN ICES-3 B/NMB-3 B

FOR CUSTOMERS IN EUROPE

CE

Hereby, Sony Corporation, declares that this HDR-GW66VE Digital HD Video Camera Recorder is in compliance with the essential requirements and other relevant provisions of the Directive 1999/5/EC. For details, please access the following URL:
http://www.compliance.sony.de/

Notice for the customers in the countries applying EU Directives

This product has been manufactured by or on behalf of Sony Corporation, 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan. Inquiries related to product compliance based on European Union legislation shall be addressed to the authorized representative, Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Germany. For any service or guarantee matters, please refer to the addresses provided in the separate service or guarantee documents.

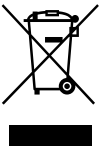
This product has been tested and found compliant with the limits set out in the EMC regulation for using connection cables shorter than 3 meters (9.8 feet).

Attention

The electromagnetic fields at the specific frequencies may influence the picture and sound of this unit.

Notice

If static electricity or electromagnetism causes data transfer to discontinue midway (fail), restart the application or disconnect and connect the communication cable (USB, etc.) again.



Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.
By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.

Disposal of waste batteries (applicable in the European Union and other European countries with separate collection systems)

This symbol on the battery or on the packaging indicates that the battery provided with this product shall not be treated as household waste.
On certain batteries this symbol might be used in combination with a chemical symbol. The chemical symbols for mercury (Hg) or lead (Pb) are added if the battery contains more than 0.0005% mercury or 0.004% lead.
By ensuring these batteries are disposed of correctly, you will help prevent potentially negative consequences for the environment and human health which could otherwise be caused by inappropriate waste handling of the battery. The recycling of the materials will help to conserve natural resources.
In case of products that for safety, performance or data integrity reasons require a permanent connection with an incorporated battery, this battery should be replaced by qualified service staff only.
To ensure that the battery will be treated properly, hand over the product at end-of-life to the applicable collection point for the recycling of electrical and electronic equipment.
For all other batteries, please view the section on how to remove the battery from the product safely. Hand the battery over to the applicable collection point for the recycling of waste batteries.
For more detailed information about recycling of this product or battery, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.

Notice for customers in the United Kingdom

A moulded plug complying with BS 1363 is fitted to this equipment for your safety and convenience.

Should the fuse in the plug supplied need to be replaced, a fuse of the same rating as the supplied one and approved by ASTA or BSI to BS 1362, (i.e., marked with an ⓐ or ⓑ mark) must be used.
If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover.
If you should lose the fuse cover, please contact your nearest Sony service station.

About language setting

- The on-screen displays in each local language are used for illustrating the operating procedures. Change the screen language before using the camcorder if necessary (p. 21).

On recording

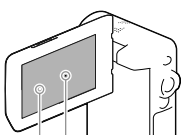
- Before starting to record, test the recording function to make sure the image and sound are recorded without any problems.
- Compensation for the contents of recordings cannot be provided, even if recording or playback is not possible due to a malfunction of the camcorder, recording media, etc.
- TV color systems differ depending on the country/region. To view your recordings on a TV, you need a TV that supports the signal format for your camcorder. For details on the signal format, refer to follows.
  PAL: HDR-GW66E/GW66VE/GWP88E/GWP88VE
  NTSC: HDR-GW66V/GWP88/GWP88V
- Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws.

Notes on use

- Do not do any of the following. Otherwise, the recording media may be damaged, recorded images may be impossible to play back or may be lost, or other malfunctions could occur.
  – ejecting the memory card when the access lamp (p. 22) is lit or flashing
  – removing the battery pack or AC Adaptor from the camcorder, or applying mechanical shock or vibration to the camcorder when the access lamp (p. 22) is lit or flashing
- When the camcorder is connected to other devices through a USB connection and the power of the camcorder is turned on, do not close the LCD panel. The image data that has been recorded may be lost.
- Use the camcorder in accordance with local regulations. The GPS function of the camcorder is activated when [GPS Setting] (p. 34) is set to [On] even if the camcorder is not turned on. During takeoff and landing of an airplane, set [Airplane Mode] to [On] (HDR-GW66V/GW66VE/GWP88V/GWP88VE).

LCD Panel

- The LCD screen is manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue, or green in color) that appear constantly on the LCD screen. These points are normal results of the manufacturing process and do not affect the recording in any way.



About this manual, illustrations and on-screen displays

- The example images used in this manual for illustration purposes are captured using a digital still camera, and therefore may appear different from images and screen indicators that actually appear on your camcorder. And, the illustrations of your camcorder and its screen indication are exaggerated or simplified for understandability.
- Design and specifications of your camcorder and accessories are subject to change without notice.

- In this manual, the internal memory (HDR-GWP88/GWP88E/GWP88V/GWP88VE) of the camcorder and the memory card are called “recording media.”
- In this manual, the DVD disc recorded with high definition image quality (HD) is called AVCHD recording disc.
- The model name is shown in this manual when there is a difference in specification between models. Confirm the model name on your camcorder.

	Recording media	Projector
HDR-GW66E	Memory card only	–
HDR-GW66V*		
HDR-GW66VE*		
HDR-GWP88	Internal memory (16 GB) + memory card	✔
HDR-GWP88E		
HDR-GWP88V*		
HDR-GWP88VE*		

The model with * is equipped with a GPS function.

Learning more about the camcorder (“Handycam” User Guide)

“Handycam” User Guide is an on-line manual. Refer to it for in-depth instructions on the many functions of the camcorder.

1 Access the Sony support page.

http://www.sony.net/SonyInfo/Support/

2 Select your country or region.

3 Search for the model name of your camcorder within the support page.

Confirm the model name on your camcorder.

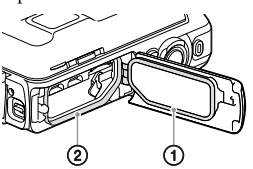
About water-proof, dust-proof, and shock-proof performance of the camcorder

This camcorder is equipped to be water-proof, dust-proof and shock-proof. Damage caused from misuse, abuse or failure to properly maintain the camcorder is not covered by the limited warranty.

- This camcorder is water-proof/dust-proof equivalent to IEC60529 IP58. The camcorder is operable up to a water depth of 10 m (33 feet) for 60 minutes.
- Do not subject the camcorder to pressurized water, such as from a tap.
- Do not use in hot springs.
- Use the camcorder in the recommended operating water temperature range of 0 °C to 40 °C (32 °F to 104 °F).
- Meeting MIL-STD 810F Method 516.5-Shock standards, this product has passed the required tests when dropped from a height of 1.5 m (5 feet) above a 5 cm (2 in.) -thick plywood board (with the LCD screen closed, facing toward the camcorder body)*.
  * Depending on use conditions and circumstances, no guarantee is made regarding damage to, malfunction of, or the water-proof performance of this camcorder.
- As for dust-proof/shock-proof performance, there is no guarantee that the camcorder will not become scratched or dented.
- Sometimes water-proof performance is lost if the camcorder is subjected to a strong shock such as from being dropped. We recommend the camcorder be inspected at an authorized repair shop for a fee.
- Accessories supplied do not meet water-proof, dust-proof, and shock-proof specifications.

Notes before using the camcorder under/near water

- Make sure that no foreign matter such as sand, hair, or dirt gets inside the battery/memory card/jack cover. Even a small amount of foreign matter may lead to water entering the camcorder.
- Confirm that the sealing gasket and its mating surfaces have not become scratched. Even a small scratch may lead to water entering the camcorder. If the sealing gasket or its mating surfaces become scratched, take the camcorder to an authorized repair shop to have the sealing gasket replaced for a fee.



① Sealing gasket
② The sealing surfaces of the sealing gasket

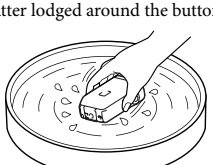
- If dirt or sand gets on the sealing gasket or its mating surfaces, wipe the area clean with a soft cloth that will not leave behind any fibers. Prevent the sealing gasket from becoming scratched by touching it while charging a battery or using a cable.
- Do not open/close the battery/memory card/jack cover with wet or sandy hands or near water. There is a risk this will lead to sand or water getting inside. Before opening the cover, perform the procedure described in “Cleaning after using the camcorder under/near water”.
- Open the battery/memory card/jack cover with the camcorder completely dry.
- Always confirm that the battery/memory card/jack cover has been securely locked.

Notes on using the camcorder under/near water

- The touch panel may be activated by water splashes on the screen icons.
- The touch panel cannot be operated underwater. Use the buttons of the camcorder to perform shooting operations.
- Do not subject the camcorder to shock such as from jumping into water.
- Do not open and close the battery/memory card/jack cover while under/near water.
- This camcorder sinks in water. Place your hand through the wrist strap to prevent the camcorder from sinking.
- Faint, white, circular spots may appear in under-water flash photos due to reflections off of floating objects. This is not a malfunction.
- Select (Underwater) in Scene Selection to shoot underwater with less distortion (p. 47).
- If water drops or other foreign matter is present on the lens, you will not be able to record clear images.

Cleaning after using the camcorder under/near water

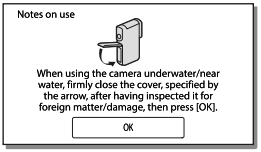
- Always clean the camcorder with water after use within 60 minutes, and do not open the battery/memory card/jack cover before cleaning is finished. Sand or water may get inside places where it cannot be seen. If not rinsed, water-proof performance will be degraded.
- Allow the camcorder to sit in pure water poured into a cleaning bowl for about 5 minutes. Then, gently shake the camcorder, press each button inside the water to clean away any salt, sand or other matter lodged around the buttons.



- After rinsing, wipe away water drops with a soft cloth. Allow the camcorder to dry completely in a shady location with good ventilation. Do not blow dry with a hair dryer as there is a risk of deformation and/or degraded water-proof performance.
- Wipe away water drops or dust on the battery/memory card/jack cover with a soft dry cloth.
- This camcorder is constructed to drain water. Water will drain from openings around the power zoom lever, etc. After removing from water, place the camcorder on a dry cloth for a while to allow water to drain.
- Bubbles may appear when the camcorder is placed under water. This is not a malfunction.
- The camcorder body may become discolored if it comes in contact with sunscreen or suntan oil. If the camcorder does come in contact with sunscreen or suntan oil, quickly wipe it clean.
- Do not allow the camcorder to sit with salt water inside or on the surface. This may lead to corrosion or discoloration, and degradation of water-proof performance.
- Iron sands may adhere to the frame around the LCD screen or the power zoom lever. If iron sands adhere to the camcorder, gently wipe them off with a soft cloth so that you will not scrape the camcorder case or the LCD screen.
- To maintain the water-proof performance, we recommend that once a year you take the camcorder to your dealer, or to an authorized repair shop, to have the sealing gasket of the battery/memory card/jack cover replaced for a fee.

About the message displayed on the screen

The following message will appear on the LCD screen of the camcorder after you replace or charge the battery, or you set [Scene Selection] to [Beach], [Underwater], or [Snow].


Notes on use
When using the camera underwater/near water, firmly close the cover, specified by the arrow, after having inspected it for foreign matter/damage, then press [OK].
OK

This does not indicate a malfunction of the camcorder.
It displays a message that you should confirm before use to maintain the waterproof performances.
Touch the area the message is displayed in order to erase the message.

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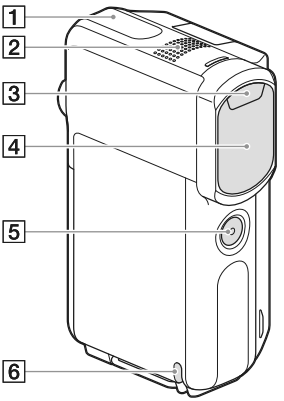
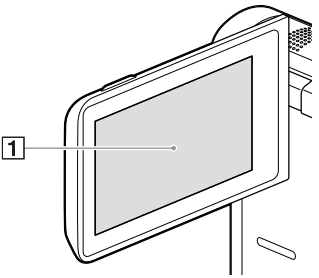
Parts and controls

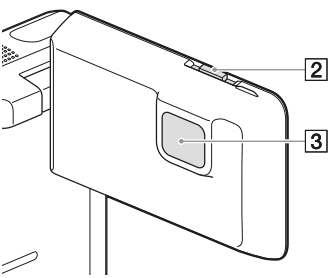
Figures in ( ) are reference pages.



1 GPS antenna (HDR-GW66V/GW66VE/GWP88V/GWP88VE) (34)
2 Built-in microphone
3 Flash
4 Lens (G lens)
5 SELF-REC button
6 Loop for the Wrist strap

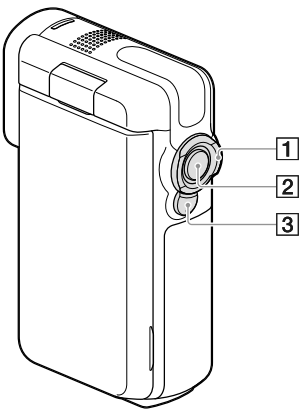


HDR-GWP88/GWP88E/GWP88V/GWP88VE

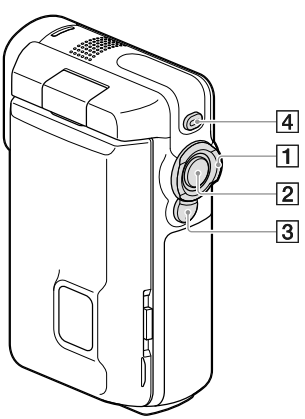


1 LCD screen/Touch panel (20, 21)
If you rotate the LCD panel 180 degrees, you can close the LCD panel with the LCD screen facing out. This is convenient during playback operations.
2 PROJECTOR FOCUS lever (36) (HDR-GWP88/GWP88E/GWP88V/GWP88VE)
3 Projector lens (36) (HDR-GWP88/GWP88E/GWP88V/GWP88VE)

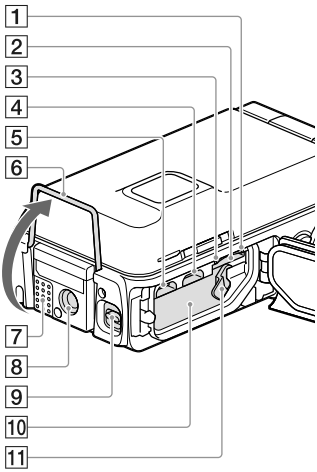
HDR-GW66E/GW66V/GW66VE



HDR-GWP88/GWP88E/GWP88V/GWP88VE



1 Power zoom lever (27)
2 START/STOP button (24)
3 PHOTO button (25)
4 PROJECTOR button (36) (HDR-GWP88/GWP88E/GWP88V/GWP88VE)



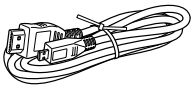
1 Memory card access lamp (22)
While the lamp is lit or flashing, the camcorder is reading or writing data.
2 Memory card slot (22)
3 CHG (charge) lamp (16)
4 Multi/Micro USB Terminal (16, 34, 44)
Supports Micro USB compatible devices.
5 HDMI OUT jack (34)
6 Stand (36)
7 Speaker
8 Tripod receptacle
Attach a tripod (sold separately: the length of the screw must be less than 5.5 mm (7/32 in.)).
Depending on the specifications of the tripod, your camcorder may not attach in the proper direction.
9 Cover lock lever (15)
10 Battery slot (15)
11 Battery release lever (15)

Supplied items

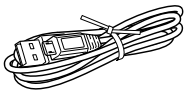
The numbers in ( ) are the supplied quantity.

Camcorder (1)

HDMI cable (1)



USB cable (Micro USB cable) (1)



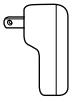
Wrist strap (1)

Rechargeable battery pack NP-BX1 (1)

"Operating Guide" (This manual) (1)

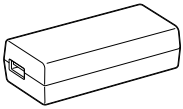
For customers in the USA and Canada

AC Adaptor AC-UD11 (1)

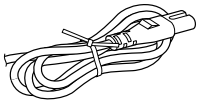


For customers in countries/regions other than the USA and Canada

AC Adaptor AC-UD10 (1)



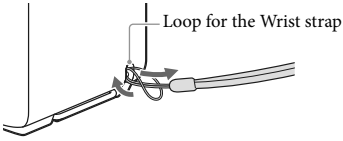
Power cord (Mains lead) (1)



Notes

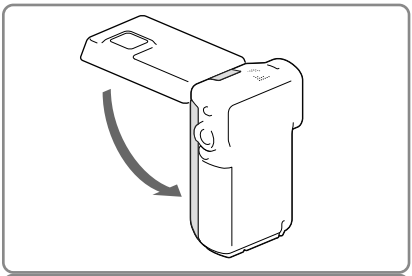
- The "PlayMemories Home" software and "PlayMemories Home Help Guide" can be downloaded from the Sony website (p. 41).

To attach the Wrist strap



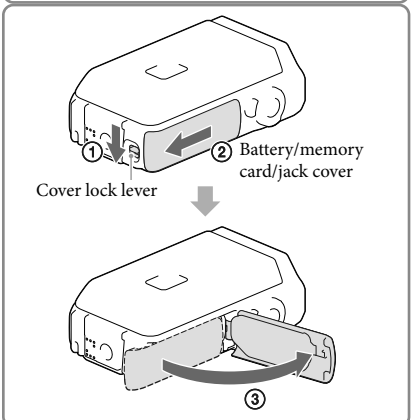
Charging the battery pack

1 Close the LCD screen.



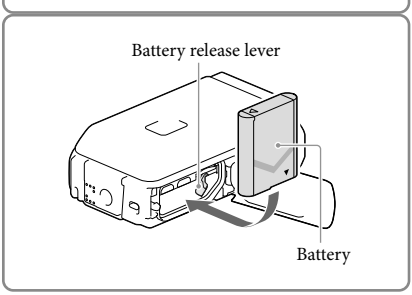
2 Open the battery/memory card/ jack cover.

- Slide the cover lock lever (①) to slide back the battery/memory card/jack cover (②). Then open the battery/memory card/jack cover (③).



3 Insert the battery.

- Insert the battery while pressing and holding the battery release lever.



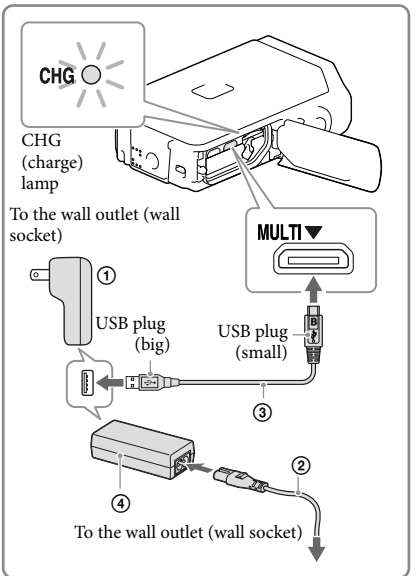
4 For customers in the USA and Canada:

Connect the AC Adaptor (AC-UD11, ①) and the USB cable (③) to your camcorder and the wall outlet (wall socket).

For customers in countries/regions other than the USA and Canada:

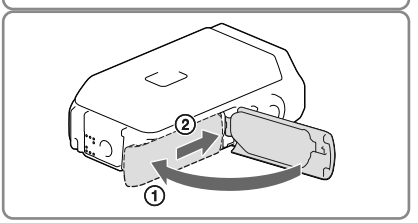
Connect the AC Adaptor (AC-UD10, ④), the power cord (mains lead) (②) and the USB cable (③) to your camcorder and the wall outlet (wall socket).

- The CHG (charge) lamp turns on.
- The CHG (charge) lamp turns off when the battery pack is fully charged. Disconnect the USB cable from the Multi/Micro USB Terminal of your camcorder.



5 Close the battery/memory card/jack cover.

- Flip the battery/memory card/jack cover back (①), then slide (②) and close the cover firmly until the yellow mark of the cover lock lever is hidden.

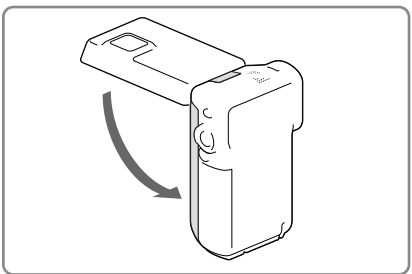


Notes

- You cannot insert any battery pack other than an NP-BX1 (supplied) into your camcorder.
- You cannot use a Sony CP-AH2R, CP-AL, or AC-UP100 portable power supply device (sold separately) to charge the camcorder.
- In the default setting, the LCD screen turns dark if you do not operate the camcorder for about 1 minute, and the power turns off if you do not operate the camcorder for 2 minutes, to save battery power ([Power Save] p. 49).

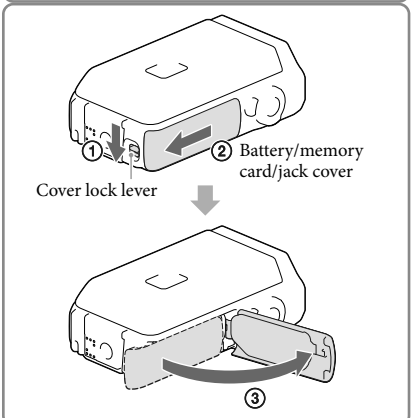
Charging the battery using your computer

1 Close the LCD screen.

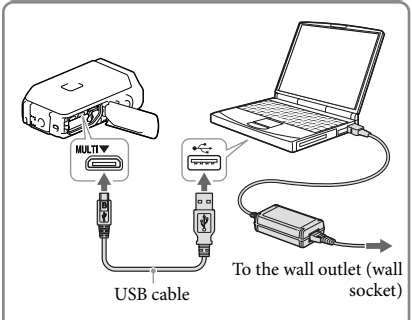


2 Open the battery/memory card/jack cover.

- Slide the cover lock lever (①) to slide back the battery/memory card/jack cover (②). Then open the battery/memory card/jack cover (③).



3 Connect the camcorder to a running computer using the USB cable.



Charging time

Approximate time (min.) required when you fully charge a fully discharged battery pack.
Charging with AC Adaptor: 155 min
Charging with your computer: 275 min

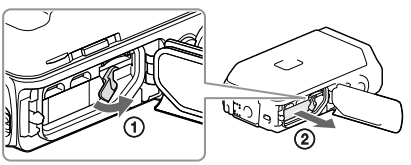
- The charging times shown above are measured when charging the camcorder at a temperature of 25 °C (77 °F). It is recommended that you charge the battery in a temperature range of 10 °C to 30 °C (50 °F to 86 °F).

To remove the battery pack

1 Close the LCD screen, slide the cover lock lever to slide back the battery/memory card/jack cover, and then open the battery/memory card/jack cover.

2 Slide the battery release lever (①) and remove the battery pack (②).

- Make sure that the battery does not fall out.



On the power supply

You can connect the USB cable to an AC Adaptor that is connected to a wall outlet (wall socket) so that the power can be supplied to the camcorder.
You can also connect your camcorder to a computer using the USB cable, so that the power will be supplied from the computer, then you do not have to worry about the amount of power remaining in the battery while copying images from the camcorder, etc.

- Insert the battery into the camcorder before connecting it to a power supply either by connecting the camcorder to the AC Adaptor or the computer.
- The recording mode can be selected only when the camcorder is connected to the AC Adaptor or a computer which is compatible with a 1,500 mA standard power supply.
- When you connect the camcorder to a computer using the USB cable during playback, the USB connection screen appears. It will turn to the Playback screen if you press [×] → [Yes].

To check the remaining battery power

An icon indicating the remaining battery power is displayed.

- It will take approximately 1 minute to display the correct remaining battery power.
- The remaining battery power may not be displayed correctly depending on ambient conditions and the environment in which you are using your camcorder.
- Your camcorder cannot display the remaining battery life in minutes using the “InfoLITHIUM” battery.

Notes on the AC Adaptor

- Do not short-circuit the USB jack or the battery terminal with a metallic object while the USB cable and the AC Adaptor are connected. This may cause a malfunction.
- When you disconnect the AC Adaptor from the power supply, hold both the camcorder and the USB plug firmly, and then disconnect the USB cable.

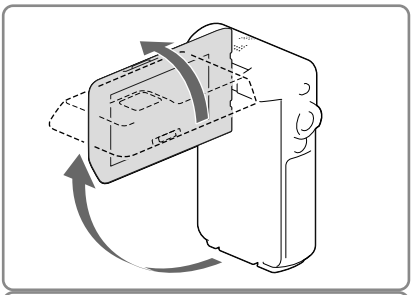
☞
- Recording time, Playing time (p. 53)

Charging the battery pack abroad

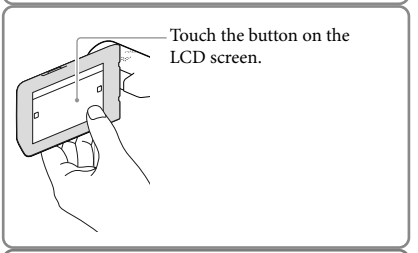
You can charge the battery pack in any countries/regions using the AC Adaptor supplied with your camcorder within the AC 100 V - 240 V, 50 Hz/60 Hz range. Do not use an electronic voltage transformer.

Turning the power on, and setting the date and time

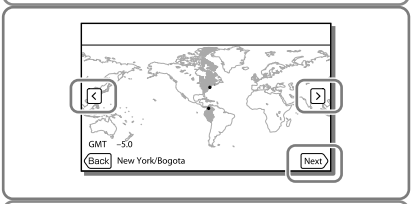
1 Open the LCD screen of your camcorder and turn the power on.



2 Select the desired language, then select [Next].

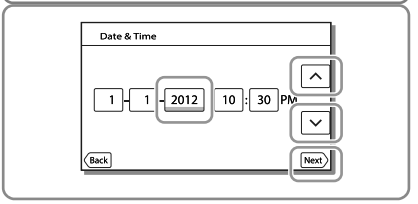


3 Select the desired geographical area with [<]/[>], then select [Next].



4 Set [Daylight Savings] or [Summer Time], select the date format and the date and time.

- If you set [Daylight Savings] or [Summer Time] to [On], the clock advances 1 hour.
- When you select the date and time, select one of the items and adjust the value with [^]/[v].
- When you select [OK] → [×], the date and time setting operation is complete.



Changing the language setting

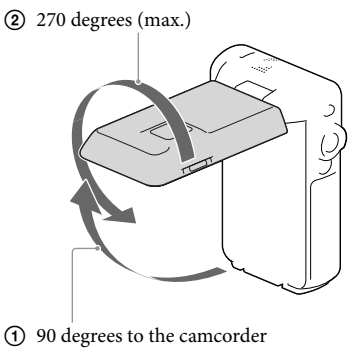
You can change the on-screen displays to show messages in a specified language.
Select MENU → [Setup] → [General Settings] → [Language Setting] → a desired language.

To turn off the power

Close the LCD screen.

To adjust the angle of the LCD panel

First open the LCD panel 90 degrees to the camcorder (①), and then adjust the angle (②).



To turn off the beep sound

Select MENU → [Setup] → [General Settings] → [Beep] → [Off].

Notes

- The recording date, time and condition, and coordinates (HDR-GW66V/GW66VE/GWP88V/GWP88VE) are recorded automatically on the recording media. They are not displayed during recording. However, you can check them as [Data Code] during playback. To display them, select MENU → [Setup] → [Playback Settings] → [Data Code] → [Date/Time].
- Once the clock is set, the clock time is automatically adjusted with [Auto Clock ADJ] and [Auto Area ADJ] set to [On]. The clock may not be adjusted to the correct time automatically, depending on the country/region selected for your camcorder. In this case, set [Auto Clock ADJ] and [Auto Area ADJ] to [Off] (HDR-GW66V/GW66VE/GWP88V/GWP88VE) (p. 49).

☞

- To set the date and time again: [Date & Time Setting] (p. 49)

Preparing the recording media

The recording media that can be used are displayed on the screen of your camcorder as following icons.

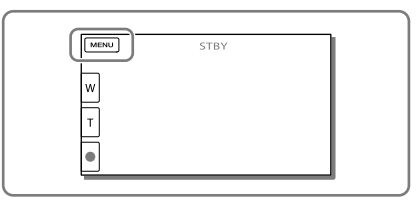
	Default recording medium	Alternative recording medium
HDR-GW66E/GW66V/ GW66VE	Memory card	—
HDR-GWP88/GWP88E/ GWP88V/GWP88VE	Internal memory	Memory card

Notes

- You cannot select a different recording medium for movies and for photos.

Selecting a recording medium (HDR-GWP88/GWP88E/GWP88V/GWP88VE)

Select MENU → [Setup] → [Media Settings] → [Media Select] → the desired medium.

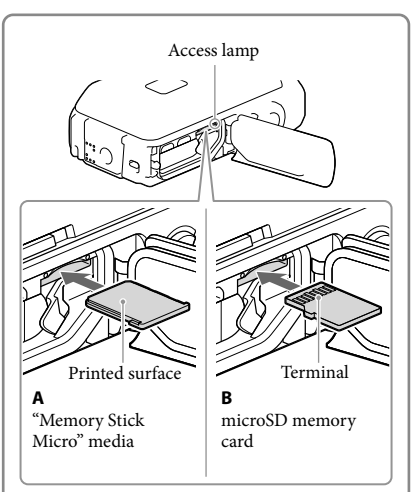


Inserting a memory card

Open the battery/memory card/jack cover, and insert the memory card until it clicks.

"Memory Stick Micro" (M2) media: Insert the memory card straight in the direction shown in figure A until it clicks.
microSD memory card: Insert the memory card straight in the direction shown in figure B until it clicks.
The [Preparing image database file. Please wait.] screen appears if you insert a new memory card. Wait until the screen disappears.

- Insert the card squarely in the correct direction, otherwise it will not be recognized by the camcorder.



To eject the memory card

Open the cover and lightly push the memory card in once.

Notes

- To ensure stable operation of the memory card, it is recommended to format the memory card with your camcorder before the first use (p. 48). Formatting the memory card will erase all the data stored on it and the data will be irrecoverable. Save your important data on your computer, etc.
- If [Failed to create a new Image Database File. It may be possible that there is not enough free space.] is displayed, format the memory card (p. 48).
- Confirm the direction of the memory card. If you forcibly insert the memory card in the wrong direction, the memory card, memory card slot, or image data may be damaged.
- Do not insert any memory card other than those that fit into the memory card slot. If you do, it may cause a malfunction.
- When inserting or ejecting the memory card, be careful so that the memory card does not pop out and drop.
- Make sure the warning indicator for the memory card has turned off (p. 51).
- You cannot use a memory card inserted in the wrong direction or at an angle.
- You can insert only one memory card.

Types of memory card you can use with your camcorder

	Capacity (operation verified)	SD Speed Class	Described in this manual
"Memory Stick Micro" (Mark2) media	Up to 16 GB	—	"Memory Stick Micro" media
microSD memory card	Up to 32 GB	Class 4 or faster	microSD card
microSDHC memory card			
microSDXC memory card	Up to 64 GB		

- Operation with all memory cards is not assured.

Notes

- The camcorder is guaranteed to operate within the temperature range of –10 °C to +40 °C (14 °F to 104 °F) but the guaranteed operation temperature range may differ depending on each type of memory card. See the operating instructions of the memory card for details.
- Movies recorded on the microSDXC memory cards cannot be imported to or played back on computers or AV devices not supporting the exFAT* file system by connecting the camcorder to these devices with the USB cable. Confirm in advance that the connecting equipment is supporting the exFAT system. If you connect an equipment not supporting the exFAT system and the format screen appears, do not perform the format. All the data recorded will be lost.

  * The exFAT is a file system that is used for the microSDXC memory cards.

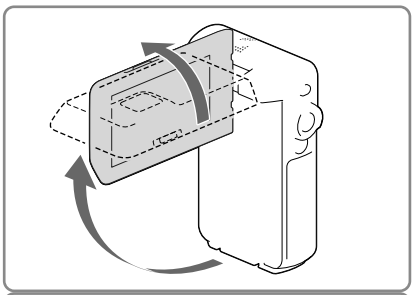
☞
- Recording/playback/editing media: Screen indicators during recording (p. 26)
- Recording time of movies/number of recordable photos (p. 53)

Recording

In the default setting, movies and photos are recorded on the following media. Movies are recorded with high definition image quality (HD).
HDR-GW66E/GW66V/GW66VE: Memory card
HDR-GWP88/GWP88E/GWP88V/GWP88VE: Internal memory

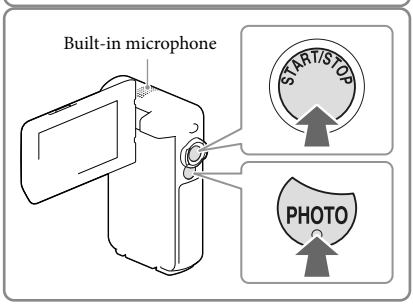
Recording movies

1 Open the LCD screen.



2 Press START/STOP to start recording.

- To stop recording, press START/STOP again.
- You can record photos during movie recording by pressing PHOTO (Dual Capture).



Notes

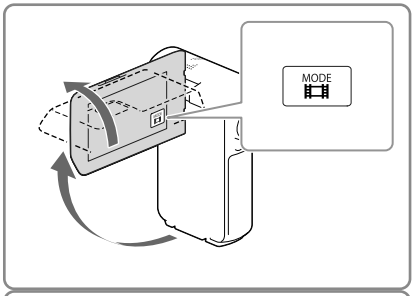
- If you close the LCD screen while recording movies, the camcorder stops recording.
- Do not touch the built-in microphone while recording.
- The maximum continuous recordable time of movies is about 13 hours.
- When a movie file exceeds 2 GB, the next movie file is created automatically.
- You may not be able to shoot photos depending on the setting in [REC Mode] and [Frame Rate].
- The flash does not work while the camera is in the (Movie) mode.
- The following states will be indicated if data is still being written onto the recording media after recording has finished. During this time, do not apply shock or vibration to the camcorder, or remove the battery or AC Adaptor.
  – Access lamp (p. 22) is lit or flashing
  – The media icon in the upper right of the LCD screen is flashing

- The LCD screen of your camcorder can display recording images across the entire screen (full pixel display). However, this may cause slight trimming of the top, bottom, right, and left edges of images when played back on a TV which is not compatible with full pixel display. It is recommended you record images with [Grid Line] set to [On] and using the outer frame of [Grid Line] (p. 48) as a guide.

☞
- Recording time (p. 53)
- Recordable time, remaining capacity: [Media Info] (p. 48)
- [Media Select] (p. 22)

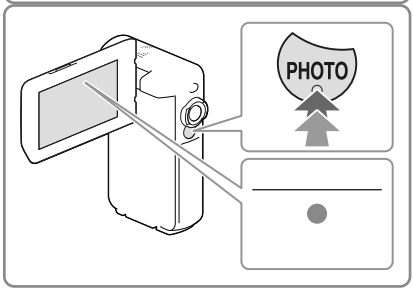
Shooting photos

1 Open the LCD screen and select [MODE] → [Photo].



2 Press PHOTO lightly to adjust the focus, then press it fully.

- When the focus is adjusted properly, AE/AF lock indicator appears on the LCD screen.



☞
- Recordable number of photos (p. 54)
- [Flash] (p. 47)
- To change the image size: [Image Size] (p. 48)

To record clear images

- When the lens is dirty or dusty, clean the surface of the lens.

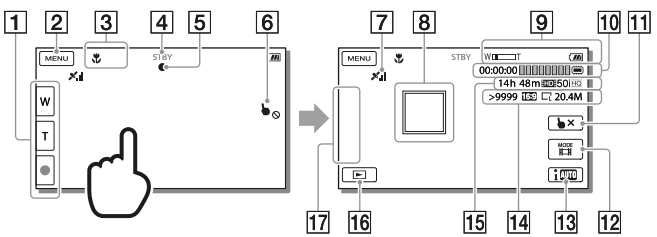
To display items on the LCD screen

Items on the LCD screen disappear if you do not operate the camcorder for a few seconds after you turn the camcorder on or switch between the movie recording and photo shooting modes.
Touch anywhere except the buttons on the LCD screen to display information on icons with functions convenient for recording.

☞
• To display items on the LCD screen all the time: [Display Setting] (p. 48)

Screen indicators during recording

Described here are icons for both movie recording and photo recording modes. Refer to the page in ( ) for details.



1 Zoom button (W: Wide/T: Telephoto), START/STOP button (in movie recording mode), PHOTO button (in photo recording mode)
2 MENU button (45)
3 Status detected by Intelligent Auto
4 Recording status ([STBY]/[REC])
5 AE/AF (automatic exposure/automatic focus) lock (25)
6 Touch pad deactivated (Underwater)
7 GPS triangulating status* (34)
8 Tracking focus
9 Zoom, Remaining battery
10 Counter (hour: minute: second), Capturing a photo, Recording/playback/editing media (22)
11 Tracking focus cancel button
12 [MODE] (Shooting Mode) button (25)

13 Intelligent Auto button

14 Approximate number of recordable photos, Aspect ratio (16:9 or 4:3), Photo size (L/M/S)

15 Estimated recording remaining time, Recording image quality, Frame rate, Recording mode (HD/STD), Movie size (MP4) (32)

16 View Images button (29)

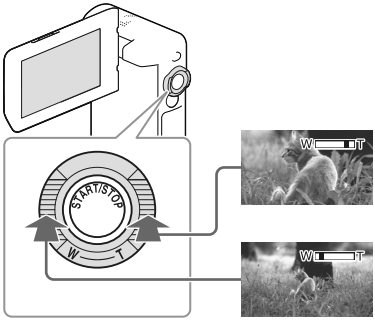
17 My Button (you can assign your favorite functions to icons displayed in this area) (48)

* HDR-GW66V/GW66VE/GWP88V/GWP88VE

To zoom the subjects

Move the power zoom lever (W or T) to magnify or reduce the size of the image.

W (Wide angle): Wider range of view
T (Telephoto): Close view



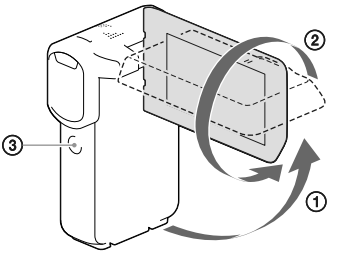
- You can magnify images up to 17 times (Extended Zoom) the original size with the power zoom lever.
- Move the power zoom lever slightly for a slower zoom. Move it further for a faster zoom.
- Be sure to keep your finger on the power zoom lever. If you move your finger off the power zoom lever, the operation sound of the power zoom lever may also be recorded.
- You cannot change the zoom speed with the W/T button on the LCD screen.
- The minimum possible distance between camcorder and subject while maintaining sharp focus is about 1 cm (about 13/32 in.) for wide angle and about 80 cm (about 31 1/2 in.) for telephoto.
- You can magnify images up to 10 times using optical zooming in the following cases:
  – When [SteadyShot] is set to other than [Active]
  – When the (Photo) mode is selected

☞
- Further zooming: [Digital Zoom] (p. 47)

To record in mirror mode

1 Open the LCD panel 90 degrees to the camcorder (①), then rotate it 270 degrees to the lens side (②).

2 Press SELF-REC button (③) to start recording.



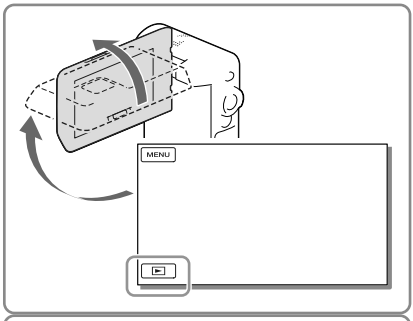
- A mirror-image of the subject appears on the LCD screen, but the image will be normal when recorded.
- You can only record in mirror mode when the LCD panel is rotated 270 degrees to the lens side because [[SELF-REC] Button] is set to [Front-facingLCD only] in the default setting. You can change the setting of the SELF-REC button to keep the button always activated.
- Movies are recorded when the (Movie) mode is selected, and photos are recorded when the (Photo) mode is selected.
- Using [Self-portrait 1 Person] or [Self-portrait 2 People] of the [Self-Timer] setting will reduce camera shake when shooting photos in mirror mode (p. 47).

Playback

You can search for recorded images by date and time of recording (Event View) or location of recording (Map View) (HDR-GW66V/GW66VE/GWP88V/GWP88VE).

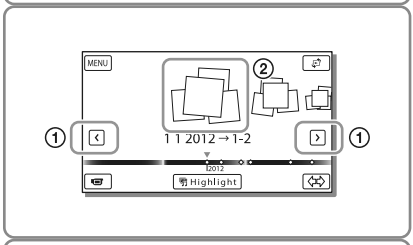
1 Open the LCD screen and select (View Images) on the LCD screen to enter the playback mode.

- You can display the Event View when the LCD screen is folded with the reverse (screen) side facing out.



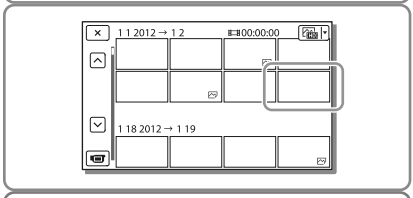
2 Select / to move the desired event to the center (①) and then select it (②).

- The camcorder displays recorded images as an event automatically, based on the date and time.

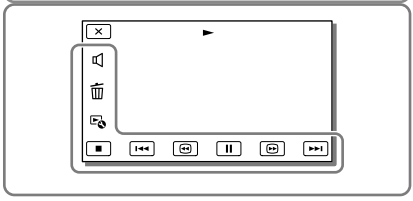


3 Select the image.

- The camcorder plays from the selected image to the last image in the event.



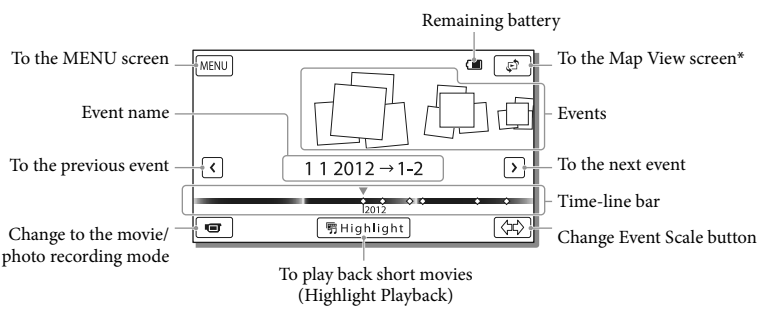
4 Select the appropriate buttons on the LCD screen for various playback operations.



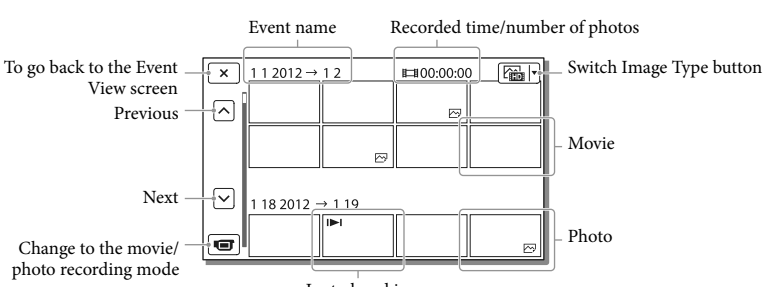
	Volume	/	Previous/Next
	Delete	/	Fast-reverse/fast-forward
	Context	/	Pause/Play
	Stop	/	Play/stop slide show

- Some buttons described above may not appear, depending on the image being played back.
- As you repeat selecting / during playback, movies are played as fast as about 5 times → about 10 times → about 30 times → about 60 times.
- Select / during pause to play movies slowly.
- To repeat Slideshow, select → [Slideshow Set] when is selected with the Switch Image Type button.

Screen display on the Event View screen



* HDR-GW66V/GW66VE/GWP88V/GWP88VE



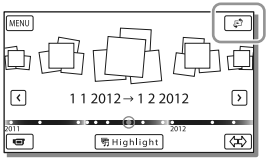
- Reduced-size images which enable you to view many images at the same time on an index screen are called “thumbnails.”

Notes

- To prevent your image data from being lost, save all your recorded images on external media periodically. (p. 40)

Playing movies and photos from the Map View (HDR-GW66V/GW66VE/GWP88V/GWP88VE)

Switch to the Map View by touching → [Map View].



- When you use the map data for the first time:
  A message appears asking you to confirm whether you agree with the terms of the license agreement of the map data. You can use the map data by touching [Agree] on the screen after agreeing to the terms of the license agreement (p. 62).
  You cannot use the map data if you touch [Not Agree]. However, when you try to use the map data for the second time, the same message will appear on the screen, and you can use the map data by touching [Agree].

To play back images with other devices

- You may not be able to play back normally images recorded on your camcorder with other devices. Also, you may not be able to play back images recorded on other devices with your camcorder.
- Standard definition image quality (STD) movies recorded on SD memory cards cannot be played on AV equipment of other manufacturers.

Recording images with various settings

Selecting the image quality of movies (Recording mode)

You can switch the recording mode to select the movie quality when recording high definition image quality (HD) movies. The recording time (p. 53) or the type of media device to which the images can be copied may change, depending on the recording mode selected.

1 Select MENU → [Image Quality/Size] → [REC Mode].

2 Select the desired recording mode.

Recording mode and the media devices to which the images can be copied

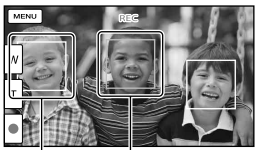
Types of media	PS*1	FX	FH/HQ/LP
On this camcorder			
Internal memory*2	✓	✓	✓
Memory card	✓	✓	✓
On external devices			
Blu-ray discs	✓	✓	✓
AVCHD recording discs	—	—	✓

*1 PS can be set only when the [Frame Rate] is set to [60p] (HDR-GW66V/GWP88/GWP88V) / [50p] (HDR-GW66E/GW66VE/GWP88E/GWP88VE).

*2 HDR-GWP88/GWP88E/GWP88V/GWP88VE

Capturing smiles automatically (Smile Shutter)

A photo is recorded automatically when the camcorder detects the smile of a person during movie recording (p. 47). ([Dual Capture] is the default setting.)



The camcorder is detecting a face.

The camcorder is detecting a smile (orange).

Notes

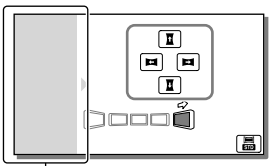
- When set to the following, you cannot use the Smile Shutter function.
  - [REC Mode]: [Highest Quality FX]
  - [Frame Rate]: [60p] (HDR-GW66V/GWP88/GWP88V) or [50p] (HDR-GW66E/GW66VE/GWP88E/GWP88VE)
- Smiles may not be detected depending on recording conditions, subject conditions, and the setting of your camcorder.

Shooting panoramic photos

You can make a panoramic photo by taking multiple photos as you sweep the camcorder around, and then combine them into one.

1 MENU → [Shooting Mode] → [iSweep Panorama].

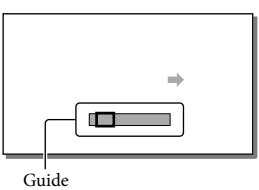
2 Align the camcorder with the end of the subject to be shot and press PHOTO.



This part will not be recorded.

- You can select the direction in which you move the camcorder by touching / / on the LCD screen.

3 Sweep the camcorder to the end of the guide, following the indication on the screen.

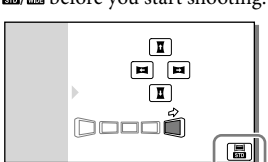


Guide

- You can play back panoramic photos using the "PlayMemories Home" software.

To select the image size of the photo taken by iSweep Panorama

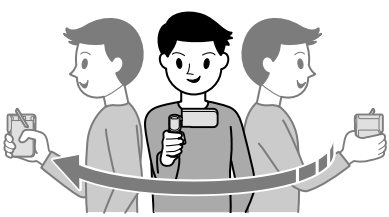
Select / before you start shooting.



- [Standard] (the default setting)
  Horizontal: 4,912 × 1,080
  Vertical: 3,424 × 1,920
- [Wide]
  Horizontal: 7,152 × 1,080
  Vertical: 4,912 × 1,920

Tips on shooting panoramic photos

Sweep the camcorder around you at a slow and steady speed (about 5 seconds for 180 degrees). A message will alert you if the speed is too fast or too slow. It is recommended that you practice the sweeping movement in advance, before you take a panoramic photo.



- For taking good panoramic photos, it is also important to keep sufficient distance between the subject and the background or to shoot in bright places such as outdoors.

Recording information on your location (GPS) (HDR-GW66V/GW66VE/GWP88V/GWP88VE)

When you set [GPS Setting] to [On] (the default setting), the GPS triangulating icon will appear on the screen and the camcorder will start searching for GPS satellite signals. The icon displayed will vary according to the intensity of the signal received. The GPS function is available when , or are displayed.

The following features are available if you use the GPS (Global Positioning System) function.

- Recording location information on movies or photos ([On] is the default setting.)
- Playing movies and photos by searching for them from a map (Map View, p. 31)
- Displaying a map of your current location

If you do not want to record location information

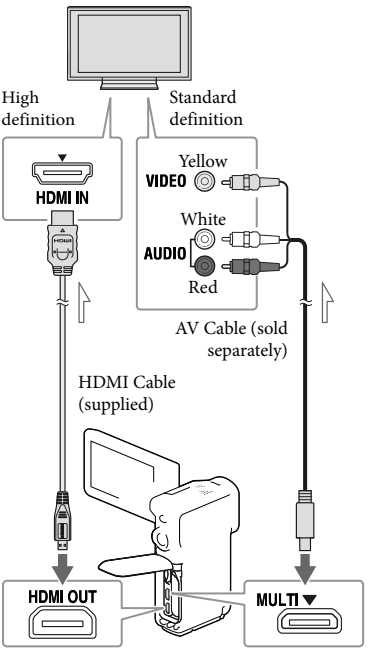
Select MENU → [Setup] → [General Settings] → [GPS Setting] → [Off].

Notes

- It may take a while before the camcorder starts triangulating.
- Use the GPS function outdoors and in open areas, as the radio signals can best be received in such areas.
- The map always displays the north at the top.

Playing images on a TV

If you connect the camcorder to the HDMI input jack of a TV, the image quality viewed on the TV screen is high definition image quality (HD). And if you can connect the camcorder to the A/V input jack of a TV, the image quality viewed on the TV is standard definition image quality (STD).



1 Switch the input on the TV to the connected jack.

2 Connect the camcorder to a TV.

3 Play a movie or a photo on the camcorder (p. 29).

Notes

- Refer to the instruction manuals of the TV as well.
- If the TV does not have the HDMI input jack, use an AV Cable (sold separately) for connection.
- You cannot use the supplied AC adaptor as the power source when the camcorder is connected to a TV using an AV cable. Charge the battery pack before connecting (p. 15).
- When movies are recorded with standard definition image quality (STD), they are played back in standard definition image quality (STD) even on a high definition TV.
- When you play back standard definition image quality (STD) movies on a 4:3 TV that is not compatible with the 16:9 signal, set [Wide Mode] to [4:3] to record movies with 4:3 aspect ratio.
- If you connect your camcorder to the TV using more than one type of cable to output images, HDMI output takes priority.

When your TV is monaural (When your TV has only one audio input jack)

Connect the yellow plug of an AV Cable (sold separately) to the video input jack and connect the white (left channel) or red (right channel) plug to the audio input jack of your TV or VCR.

When connecting to your TV via a VCR

Connect your camcorder to the LINE IN input on the VCR using an AV Cable (sold separately). Set the input selector on the VCR to LINE (VIDEO 1, VIDEO 2, etc.).
☞

- Setting the aspect ratio supported by the TV: [TV Type] (p. 49)

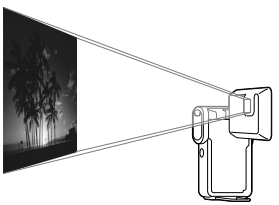
On "Photo TV HD"

This camcorder is compatible with the "Photo TV HD" standard. "Photo TV HD" allows for highly-detailed, photo-like depiction of subtle textures and colors. By connecting Sony's Photo TV HD-compatible devices using an HDMI cable*, a whole new world of photos can be enjoyed in breathtaking HD quality.

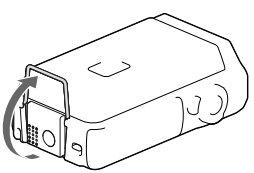
* The TV will automatically switch to the appropriate mode when displaying photos.

Using the built-in projector (HDR-GWP88/GWP88E/GWP88V/GWP88VE)

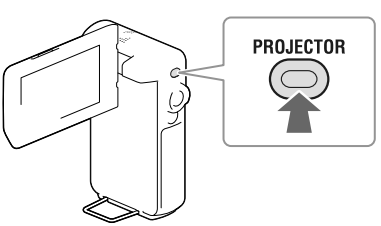
You can use a flat surface such as a wall as a screen to view recorded images using the built-in projector.



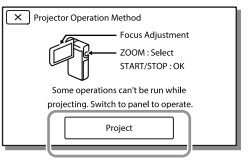
1 Pull out the stand.



2 Face the projector lens towards a surface, such as a wall, and then press PROJECTOR.

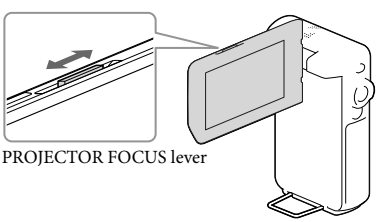


3 When the operating guide screen appears, select [Project].


Projector Operation Method
Focus Adjustment
ZOOM : Select
START/STOP : OK
Some operations can't be run while projecting. Switch to panel to operate.
Project

- This screen appears the first time you use the built-in projector after the camcorder is turned on.

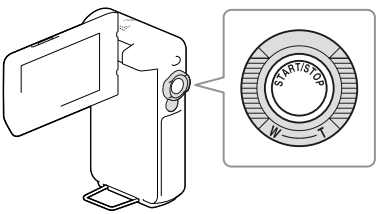
4 Adjust the focus of the projected image using the PROJECTOR FOCUS lever.



PROJECTOR FOCUS lever

- The projected image is larger when the distance between your camcorder and the reflecting surface increase.
- It is recommended that you place the camcorder about 0.5 m (1.6 feet) or further away from the surface that the images are to be projected onto.

5 Use the power zoom lever to move the selection frame that appears on the LCD screen, then press START/STOP button.



- For details on playback, see page 29.
- To turn off the projector, press PROJECTOR.

Notes

- The LCD screen turns off while an image is being projected.
- Be careful of the following operations or situations while using the projector.
  - Make sure not to project images towards the eyes.
  - Make sure not to touch the projector lens.
  - The LCD screen and the projector lens become hot while in use.
  - Using the projector shortens battery life (using the supplied AC Adaptor is recommended).
- The following operations are unavailable while you are using the projector.
  - Map operation (HDR-GWP88V/GWP88VE)
  - Output of Highlight Playback to a device such as a TV
  - Operation of the camcorder with the LCD screen closed
  - Several other functions
- When the projected images contain a lot of black, faint color unevenness may appear. This is caused by light reflection in the projector lens and is not a malfunction.

Editing on your camcorder

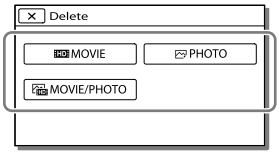
Notes

- Some basic editing operations can be done on the camcorder. If you want to perform advanced editing operations, install the "PlayMemories Home" software.
- You cannot restore images once they are deleted. Save important movies and photos in advance.
- Do not remove the battery pack or the AC Adaptor from your camcorder while deleting or dividing the images. It may damage the recording media.
- Do not eject the memory card while deleting or dividing images from the memory card.
- If you delete or divide movies/photos that are included in saved scenarios, the scenarios will also be deleted.

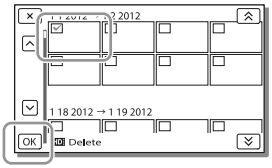
Deleting movies and photos

1 Select MENU → [Edit] (HDR-GW66E/GW66V/GW66VE) or [Edit/Copy] (HDR-GWP88/GWP88E/GWP88V/GWP88VE) → [Delete].

2 Select [Multiple Images], and then select the type of image you want to delete.



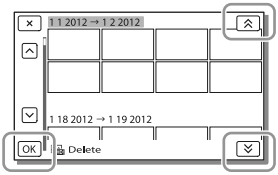
3 Add check marks ✓ to the movies or photos to be deleted and select OK.



To delete all movies/photos in the selected date at one time

1 In step 2, select [All In Event].

2 Select the date you want to delete using ⌃/⌄, and then select OK.



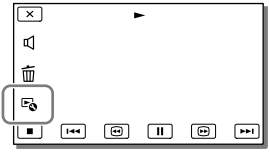
To delete a part of a movie

You can divide a movie and delete it.

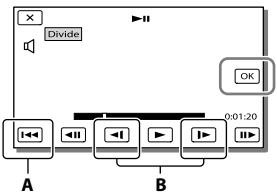
☞
- Release protection: [Protect] (p. 48)
- [Format] (p. 48)

Dividing a movie

1 Select ✂ → [Divide] on the movie playback screen.



2 Select the point where you want to divide the movie into scenes using ▶/II, and then select OK.



A: Returns to the beginning of the selected movie
B: Adjusts the dividing point with more precision

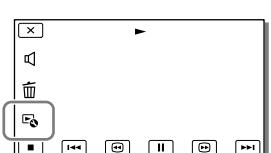
Notes

- A slight difference may occur from the point where you select and the actual dividing point, as your camcorder selects the dividing point based on about half-second increments.
- An MP4 movie cannot be divided.

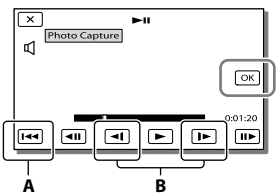
Capturing a photo from a movie (HDR-GW66V/GWP88/GWP88E/GWP88V/GWP88VE)

You can capture images from movies recorded with your camcorder.

1 Select → [Photo Capture] that appears on the playback screen of a movie.



2 Select the point where you want to capture a photo using ▶/II, and then select OK.



A: Returns to the beginning of the selected movie
B: Adjusts the capturing point with more precision

If the movie was recorded with one of the following image quality levels, the image size will be set as shown below.

- High definition image quality (HD) or MP4: [2.1 M] (16:9)
- Wide aspect ratio (16:9) with standard definition image quality (STD): [0.2 M] (16:9)
- 4:3 aspect ratio with standard definition image quality (STD): [VGA (0.3 M)] (4:3)

Notes

- You cannot save captured images to the memory card (HDR-GWP88E/GWP88VE).

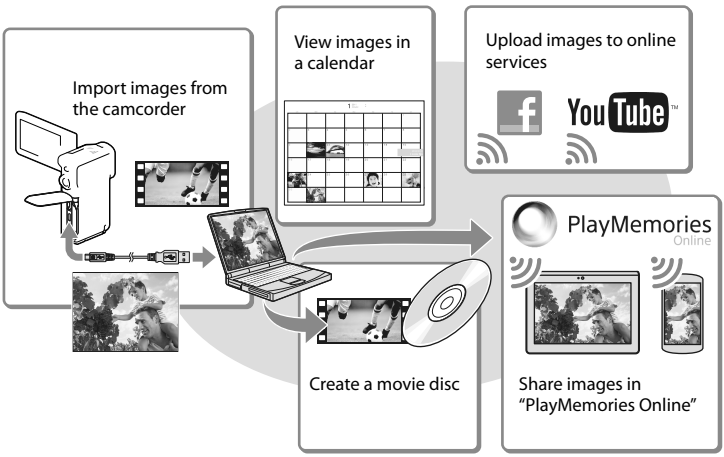
On recording date and time of captured photos

- The recording date and time of captured photos are the same as the recording date and time of the movies.
- If the movie you are capturing from has no data code, the recording date and time of the photo will be the date and time you captured from the movie.

Playing images on a computer

The “PlayMemories Home” software allows you to import movies and still images to your computer to use them in a variety of ways.

What you can do with “PlayMemories Home” software (Windows)



“PlayMemories Home” can be downloaded from the following URL.
www.sony.net/pm

Notes

- An Internet connection is required to install “PlayMemories Home.”
- An Internet connection is required to use “PlayMemories Online” and other online services. The services may not be available in some countries/regions.

Software for Mac

The “PlayMemories Home” software is not supported with Mac computers. To import images from the camcorder to your Mac and play them, use the appropriate software on your Mac. For details, visit the following URL.
http://www.sony.co.jp/imsoft/Mac/

Preparing a computer

(Windows)

Checking the computer system

OS*1
Microsoft Windows XP SP3*2/Windows Vista SP2*3/Windows 7 SP1/Windows 8
CPU*4
Intel Core Duo 1.66 GHz or faster, or Intel Core 2 Duo 1.66 GHz or faster (Intel Core 2 Duo 2.26 GHz or faster is required when processing FX or FH movies, and Intel Core 2 Duo 2.40 GHz or faster is required when processing PS movies.)
Memory
Windows XP: 512 MB or more (1 GB or more is recommended) Windows Vista/ Windows 7/Windows 8: 1 GB or more
Hard disk
Disk volume required for installation: Approximately 500 MB
Display
Minimum 1,024 × 768 dots

*1 Standard installation is required. Operation is not assured if the OS has been upgraded or in a multi-boot environment.

*2 64-bit editions and Starter (Edition) are not supported. Windows Image Mastering API (IMAPI) Ver.2.0 or newer is required to use disc creation function, etc.

*3 Starter (Edition) is not supported.

*4 Faster processor is recommended.

Notes

- Operation with all computer environments is not assured.

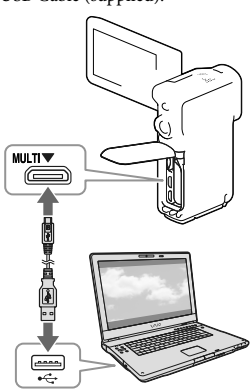
Installing the "PlayMemories Home" software in your computer

1 Access the following download site using an Internet browser on your computer, then click [Install] → [Run].

www.sony.net/pm

2 Install according to the on-screen instructions.

- When the on-screen instructions prompting you to connect the camcorder to a computer appear, connect the camcorder to your computer with the USB Cable (supplied).



- When the installation completes, "PlayMemories Home" starts up.

Notes on installation

- If the “PlayMemories Home” software is already installed on your computer, connect the camcorder to your computer. Functions that can be used with this camcorder will then be available.
- If the “PMB (Picture Motion Browser)” software is installed on your computer, it will be overwritten by the “PlayMemories Home” software. In this case, you cannot use some functions that were available with “PMB” with this “PlayMemories Home” software.

To disconnect your camcorder from the computer

1 Click the icon at the bottom right of the desktop of the computer → [Safely remove USB Mass Storage Device].

2 Select → [Yes] on the camcorder screen.

3 Disconnect the USB cable.

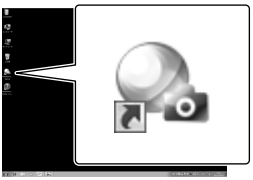
- If you are using Windows 7 or Windows 8, click , then click .

Notes

- When you access the camcorder from the computer, use the “PlayMemories Home” software. Operation is not guaranteed if you operate the data using software other than the “PlayMemories Home” software or you directly manipulate files and the folders from a computer.
- Images cannot be saved to some discs depending on the configuration selected in [REC Mode]. Movies recorded in [60p Quality PS] (HDR-GW66V/GWP88/GWP88V)/[50p Quality PS] (HDR-GW66E/GW66VE/GWP88E/GWP88VE) or [Highest Quality FX] mode can only be saved to a Blu-ray disc.
- You cannot create a disc with movies recorded in [MP4 MP4] mode.
- The camcorder automatically divides an image file that exceeds 2 GB and saves the parts as separate files. Files will play back properly on the camcorder, however image files may be shown as separate files on a computer when inputting to or playing back with the “PlayMemories Home” software.

Starting the "PlayMemories Home" software

1 Double-click the "PlayMemories Home" icon on the computer screen.



- When using Windows 8, select the "PlayMemories Home" icon from the start screen.

2 Double-click the "PlayMemories Home Help Guide" short-cut icon on the computer screen to see how to use "PlayMemories Home."

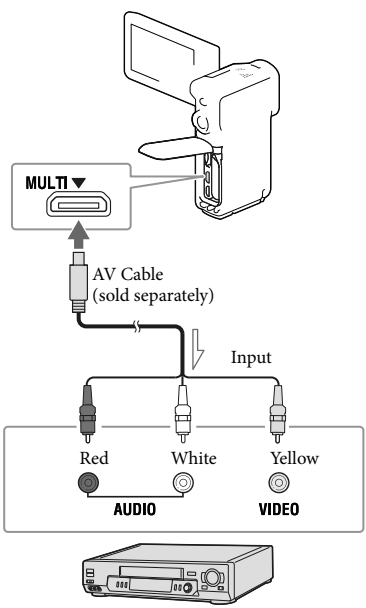
- When using Windows 8, select [PlayMemories Home Help Guide] from the help menu of "PlayMemories Home."
- If the icon is not displayed on the computer screen, click [Start] → [All Programs] → [PlayMemories Home] → the desired item.
- For details on "PlayMemories Home," select ? ("PlayMemories Home Help Guide") on the software or visit the PlayMemories Home support page (http://www.sony.co.jp/pmh-se/).

Creating a standard definition image quality (STD) disc with a recorder

Connect your camcorder to a disc recorder with an AV Cable (sold separately). You can copy images played back on your camcorder on a disc or video cassette.

Notes

- You cannot use the supplied AC adaptor as the power source when the camcorder is connected to a TV using an AV cable. Charge the battery pack before connecting (p. 15).
- Refer to the instruction manual supplied with the device connected.



Signal flow

1 Insert the recording medium in the recording device (a disc recorder, etc.).

- If your recording device has an input selector, set it to the input mode.

2 Connect your camcorder to the recording device with an AV Cable (sold separately).

- Connect your camcorder to the input jacks of the recording device.

3 Start playback on your camcorder, and record it on the recording device.

4 When dubbing is finished, stop the recording device, and then your camcorder.

Notes

- You cannot copy images to recorders connected with an HDMI cable.
- Since copying is performed via analog data transfer, the image quality may deteriorate.
- High definition image quality (HD) movies will be copied with standard definition image quality (STD).
- When you connect a monaural device, connect the yellow plug of an AV Cable (sold separately) to the video input jack, and the white (left channel) or the red (right channel) plug to the audio input jack on the device.

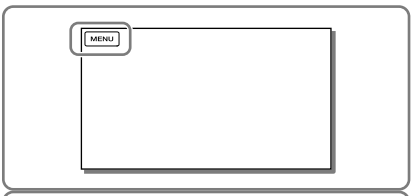
- Copying date and time information: [Data Code] (p. 48)
- Using 4:3 screen size display device: [TV Type] (p. 49)

Using menus

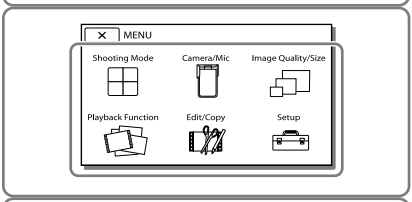
The camcorder has various menu items under each of 6 menu categories.

Shooting Mode (Items for selecting a shooting mode) → p. 47
Camera/Mic (Items for customized shooting) → p. 47
Image Quality/Size (Items for setting up image quality or size) → p. 48
Playback Function (Items for playback) → p. 48
Edit (HDR-GW66E/GW66V/GW66VE) or Edit/Copy (HDR-GWP88/GWP88E/GWP88V/GWP88VE) (Items for editing images such as protect) → p. 48
Setup (Other setup items) → p. 48

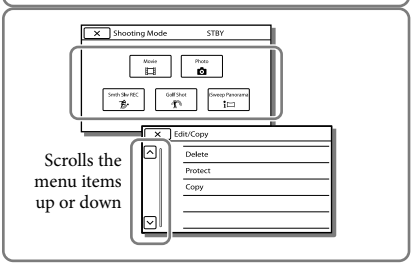
1 Select MENU.



2 Select a category.



3 Select your desired menu item.

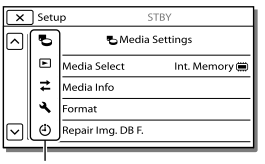


Notes

- Select × to finish setting the menu or to return to the previous menu screen.

To find a menu item quickly

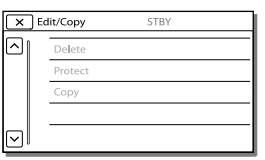
The [Camera/Mic] and [Setup] menus have sub-categories. Select the sub-category icon so that the LCD screen displays the list of menus in the sub-category selected.



Sub-category icons

When you cannot select a menu item

Grayed out menu items or settings are not available.
When you select the grayed out menu item, your camcorder displays the reason why you cannot select the menu item or the instruction of under which condition you can set the menu item.



Menu lists

Shooting Mode

Movie ..... Records movies.
Photo ..... Shoots photos.
Smth Slw REC ..... Records smooth slow-motion movies.
Golf Shot ..... Divides two seconds of fast movement into frames which are then recorded as a movie and photos. Keep the subject in the white frame in the center of the screen when recording.
iSweep Panorama ..... Takes a panoramic photo (p. 32).

Camera/Mic

Manual Settings

White Balance ..... Adjusts the color balance to the recording environment.
Spot Meter/Fcs ..... Adjusts the brightness and focus for the selected subject simultaneously.
Spot Meter ..... Adjusts the brightness of images to a subject you touch on the screen.
Spot Focus ..... Adjusts the focus on a subject you touch on the screen.
Exposure ..... Adjusts the brightness of movies and photos. If you select [Manual], adjust the brightness (exposure) using [+]/[−].
Focus ..... Adjusts the focus manually. If you select [Manual], select [▲←] to adjust the focus for a nearby subject and [→▲] to adjust the focus for a distant subject.
Low Lux ..... Records bright color images in the dim.

Camera Settings

Scene Selection ..... Selects an appropriate recording setting according to the type of scene, such as night view or beach.
Fader ..... Fades scenes in or out.
Self-Timer ..... Sets the self-timer when your camcorder is in photo recording mode.
Tele Macro ..... Focuses on the subject with its background blurred.
SteadyShot ..... Automatically corrects the camera-shake correction when shooting with zooming not only when shooting with wide-angle.
SteadyShot ..... Sets the SteadyShot function when shooting photos.
Digital Zoom ..... Sets the maximum zoom level of the digital zoom.
Conversion Lens ..... Sets the type of an attached conversion lens (sold separately).
Auto Back Light ..... Adjusts the exposure for backlit subjects automatically.

Face

Face Detection ..... Automatically detects faces.
Smile Shutter ..... Automatically takes a shot whenever a smile is detected (p. 32).
Smile Sensitivity ..... Sets the smile detection sensitivity for the Smile Shutter function.

Flash

Flash ..... Sets how the flash is activated when shooting photos.
Flash Level ..... Sets the brightness of flash.
Red Eye Reduction ..... Prevents redeye when shooting with flash.

Microphone

- Blt-in Zoom Mic ..... Records movies with vivid sound appropriate to the zoom position.
- Wind Noise Reduct. ..... Reduces the wind noise recorded from the built-in microphone.
- Micref Level ..... Sets the microphone level for recording.

Shooting Assist

- My Button ..... Assigns functions to My Buttons.
- Grid Line ..... Displays frames as a guide to make sure the subject is horizontal or vertical.
- Display Setting ..... Sets the duration that icons or indicators are displayed on the LCD screen.

Image Quality/Size

- REC Mode ..... Sets the mode to record movies (p. 32).
- Frame Rate ..... Sets the frame rate to record movies.
- HD / MP4 / STD Setting .... Sets the image quality for recording movies.
- Wide Mode ..... Sets the horizontal to vertical ratio when recording movies with standard definition image quality (STD).
- x.v.Color ..... Records a wider range of colors. Set this item when you watch images with a TV which is compliant with x.v.Color.
- Image Size ..... Sets the photo size.

Playback Function

- Event View ..... Starts playing images from the Event View display.
- Map View*1 ..... Starts playing the images from the Map View display.
- Highlight Movie ..... Starts playing Highlight Playback scenes or Highlight Scenarios saved with standard definition image quality (STD).
- Scenario ..... Starts playing the scenarios that were saved by Highlight Playback.

Edit*2 / Edit/Copy*3

- Delete ..... Deletes movies or photos (p. 38).
- Protect ..... Protects movies or photos to avoid deleting.
- Copy*3 ..... Copies images.

Setup

Media Settings

- Media Select*3 ..... Selects the type of recording media (p. 22).
- Media Info ..... Displays information on the recording media.
- Format ..... Deletes and formats all data on the recording media.
- Repair Img. DB F. ..... Repairs the image database file on the recording media (p. 52).
- File Number ..... Sets how to assign the file number to photos.

Playback Settings

- Data Code ..... Displays information that was recorded automatically at the time of recording.
- Volume ..... Adjusts the volume of playback sound.

Connection

- TV Type ..... Converts the signal depending on the TV connected (p. 34).
- HDMI Resolution ..... Selects the output image resolution when connecting your camcorder to a TV with an HDMI cable.
- CTRL FOR HDMI ..... Sets whether or not the TV's Remote Commander is to be used when the camcorder is connected to a "BRAVIA" Sync compatible TV with the HDMI cable.
- USB Connect ..... Select this item when no instructions appear on the LCD screen when you connect your camcorder to an external device via USB.
- USB Connect Setting ... Sets the connection mode when the camcorder is connected to a computer or a USB device.
- USB Power Supply ..... Supplies power to the camcorder using a USB cable.
- USB LUN Setting ..... Sets the camcorder to improve the compatibility of a USB connection by restricting some USB functions.

General Settings

- Beep ..... Sets whether the camcorder sounds operation beeps or not.
- LCD Brightness ..... Adjusts the brightness of the LCD screen.
- [SELF-REC] Button ..... Sets the SELF-REC button's function.
- Your Location*1 ..... Displays the current location on a map.
- Airplane Mode*1 ..... Settings to be used when you are on board an airplane.
- GPS Setting*1 ..... Receives the GPS signal (p. 34).
- Language Setting ..... Sets the display language (p. 21).
- Power Save ..... Sets the LCD screen and the power so that they turn off automatically.
- Initialize ..... Initializes all the settings to the default settings.

Clock Settings

- Date & Time Setting ..... Sets the date and time (p. 20).
- Area Setting ..... Adjusts for a time difference without stopping the clock (p. 20).
- Auto Clock ADJ *1 ..... Adjusts the clock automatically by acquiring the time from the GPS system.
- Auto Area ADJ*1 ..... Corrects time differences automatically by acquiring the current location information from the GPS system.

---

*1 HDR-GW66V/GW66VE/GWP88V/GWP88VE
*2 HDR-GW66E/GW66V/GW66VE
*3 HDR-GWP88/GWP88E/GWP88V/GWP88VE

Troubleshooting

If you run into any problems using your camcorder, follow the steps below.

① Check the list (p. 50 to 52), and inspect your camcorder.

↓

② Disconnect the power source, attach the power source again after about 1 minute, and turn the camcorder on.

↓

③ Touch MENU → [Setup] → [General Settings] → [Initialize]. If you select [Initialize], all settings, including the clock setting, are reset.

↓

④ Contact your Sony dealer or local authorized Sony service facility.

- Your camcorder may be required to initialize or change the current internal memory of your camcorder, depending on the problem. In the event of this, the data stored on the internal memory will be deleted. Be sure to save the data on the internal memory on other media (backup) before sending your camcorder for repair. We will not compensate you for any loss of internal memory data (HDR-GWP88/GWP88E/GWP88V/GWP88VE).
- During repair, we may check a minimum amount of data stored on the internal memory in order to investigate the problem. However, your Sony dealer will neither copy nor retain your data (HDR-GWP88/GWP88E/GWP88V/GWP88VE).
- See the "Handycam" User Guide (p. 6) for details on the symptoms of your camcorder, and "PlayMemories Home Help Guide" (p. 43) on connecting your camcorder to a computer.

The power does not turn on.

- Attach a charged battery pack to the camcorder (p. 15).
- The plug of the AC Adaptor has been disconnected from the wall outlet (wall socket). Connect it to the wall outlet (wall socket) (p. 16).

The camcorder does not operate even when the power is set to on.

- It takes a few seconds for your camcorder to be ready to shoot after the power is turned on. This is not a malfunction.
- Disconnect the AC Adaptor from the wall outlet (wall socket) or remove the battery pack, then reconnect the AC Adaptor or insert the battery pack again after about 1 minute.

Your camcorder gets warm.

- Your camcorder may become warm during operation. This is not a malfunction.

The power abruptly turns off.

- Use the AC Adaptor (p. 18).
- In the default setting, when about 2 minutes have elapsed while you do not operate your camcorder, the camcorder automatically turns off. Change the setting of [Power Save] (p. 49), or turn on the power again.
- Charge the battery pack (p. 15).

Pressing START/STOP, PHOTO or SELF-REC button does not record images.

- The playback screen is displayed. Stop playback, and select MENU → [Shooting Mode] → [Movie] or [Photo].
- Your camcorder is recording the image you have just shot on the recording media. You cannot make new recording during this period.
- The recording medium is full. Delete unnecessary images (p. 38).

- Total number of movie scenes or photos exceeds the recordable capacity of your camcorder (p. 53). Delete unnecessary images (p. 38).

The camcorder stops operating.

- The camcorder may stop recording if the camcorder is subject to continuous vibration.

"PlayMemories Home" cannot be installed.

- An Internet connection is required to install "PlayMemories Home."
- Check the computer environment or installation procedure required to install "PlayMemories Home."

"PlayMemories Home" does not work correctly.

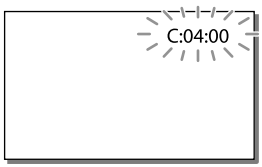
- Quit "PlayMemories Home" and restart your computer.

The camcorder is not recognized by the computer.

- Disconnect devices from the USB jack of the computer other than the keyboard, mouse, and your camcorder.
- Disconnect the USB cable from the computer and your camcorder, and restart the computer, then connect the computer and your camcorder again in the correct order.

Self-diagnosis display/Warning indicators

If indicators appear on the LCD screen, check the following.
If the problem persists even after you have tried to fix a couple of times, contact your Sony dealer or local authorized Sony service facility. In this case, when you contact them, give them all the numbers of the error code beginning with C or E.
You may hear a melody when some warning indicators appear on the screen.



C:06:□□

- The battery pack temperature is high. Change the battery pack or place it in a cool place.

C:13:□□ / C:32:□□

- Remove the power source. Reconnect it and operate your camcorder again.

E:□□:□□

- Follow the steps from ② on page 50.

- The battery pack is nearly used up.

- The battery pack temperature is high. Change the battery pack or place it in a cool place.

- No memory card is inserted (p. 22).
- When the indicator flashes, there are not enough free spaces for recording images.

Delete unnecessary images (p. 38), or format the memory card after storing the images on other media (p. 48).
- The image data base file may be damaged. Check the data base file by selecting MENU → [Setup] → [Media Settings] → [Repair Img. DB F.] → the recording medium (HDR-GWP88/GWP88E/GWP88V/GWP88VE).

- The memory card is damaged.
- Format the memory card with your camcorder (p. 48).

- Incompatible memory card is inserted (p. 23).

- Access to the memory card was restricted on another device.

- There is something wrong with the flash.

- The amount of lights is not sufficient, so camera-shake easily occurs. Use the flash.
- The camcorder is unsteady, so camera-shake easily occurs. Hold the camcorder steady with both hands and record images. However, note that the camera-shake warning indicator does not disappear.

- The recording medium is full.
- Photos cannot be recorded during processing. Wait for a while, then record.
- When set to the following, you cannot shoot photos during movie recording.
  – [REC Mode]: [Highest Quality FX]
  – [Frame Rate]: [60p] (HDR-GW66V/GWP88/GWP88V) or [50p] (HDR-GW66E/GW66VE/GWP88E/GWP88VE)

SELF-REC

- You can operate the SELF-REC button only when the LCD panel is rotated 270 degrees to the lens side.
  Select MENU → [Setup] → [General Settings] → [[SELF-REC] Button] → [Always Active] to enable to operate the SELF-REC button all the time.

Recording time of movies/number of recordable photos

"HD" stands for high definition image quality, and "STD" stands for standard definition image quality.

Expected time of recording and playback with each battery pack

Recording time

Approximate time available when you use a fully charged battery pack.

(unit: minute)

Battery pack			
Image quality	HD	MP4	STD
NP-BX1 (supplied)	120 60	135 65	120 60

- Top: Continuous recording time
  Bottom: Typical recording time
- Each recording time is measured when the camcorder is recording high definition image quality (HD) movies with [REC Mode] set to [Standard HQ].
- Typical recording time shows the time when you repeat recording start/stop, switching [Shooting Mode], and zooming.
- Times measured when using the camcorder at 25 °C (77 °F). 10 °C to 30 °C (50 °F to 86 °F) is recommended.
- The recording and playback time will be shorter when you use your camcorder in low temperatures.
- The recording and playback time will be shorter depending on the conditions under which you use your camcorder.

Playing time

Approximate time available when you use a fully charged battery pack.

(unit: minute)

Battery pack			
Image quality	HD	MP4	STD
NP-BX1 (supplied)	210	210	230

Expected recording time of movies

Internal memory (HDR-GWP88/GWP88E/GWP88V/GWP88VE)

High definition image quality (HD) in h (hour) and min (minute)

Recording mode	Recording time	
	HDR-GWP88/GWP88E	HDR-GWP88V/GWP88VE
[50p Quality PS]/[60p Quality PS]	1 h 15 min (1 h 15 min)	1 h (1 h)
[Highest Quality FX]	1 h 30 min (1 h 30 min)	1 h 10 min (1 h 10 min)
[High Quality FH]	2h (2h)	1 h 40 min (1 h 40 min)
[Standard HQ]	3 h 40 min (2 h 45 min)	2 h 55 min (2 h 10 min)
[Long Time LP]	6 h 25 min (5 h 15 min)	5 h 10 min (4 h 15 min)

MP4 in h (hour) and min (minute)

Recording time	
HDR-GWP88/GWP88E	HDR-GWP88V/GWP88VE
5 h 25 min (5 h 25 min)	4 h 20 min (4 h 20 min)

Standard definition image quality (STD) in h (hour) and min (minute)

Recording mode	Recording time	
	HDR-GWP88/ GWP88E	HDR-GWP88V/ GWP88VE
[Standard HQ]	3 h 50 min (3 h 30 min)	3 h 5 min (2 h 50 min)

- You can record movies of a maximum of 3,999 scenes with high definition image quality (HD) and 9,999 scenes with standard definition image quality (STD). And you can record a maximum of 40,000 MP4 movies and photos collectively.
- The maximum continuous recording time of movies is approximately 13 hours.
- Your camcorder uses the VBR (Variable Bit Rate) format to automatically adjust image quality to suit the recording scene. This technology causes fluctuations in the recording time of the media. Movies containing quickly moving and complex images are recorded at a higher bit-rate, and this reduces the overall recording time.

Notes

- The number in ( ) is the minimum recordable time.

Memory card

High definition image quality (HD)

(unit: minute)

Recording mode	16 GB	32 GB	64 GB
[50p Quality PS]/[60p Quality PS]	75 (75)	150 (150)	305 (305)
[Highest Quality FX]	90 (90)	180 (180)	360 (360)
[High Quality FH]	120 (120)	245 (245)	495 (495)
[Standard HQ]	215 (165)	440 (330)	880 (665)
[Long Time LP]	380 (310)	770 (630)	1545 (1260)

MP4

(unit: minute)

16 GB	32 GB	64 GB
320 (320)	650 (650)	1305 (1305)

Standard definition image quality (STD)

(unit: minute)

Recording mode	16 GB	32 GB	64 GB
[Standard HQ]	225 (210)	460 (420)	920 (845)

Notes

- The recordable time may vary depending on the recording and subject conditions and [REC Mode] and [Frame Rate] (p. 48).
- The number in ( ) is the minimum recordable time.

Expected number of recordable photos

Internal memory (HDR-GWP88/ GWP88E/GWP88V/GWP88VE)

You can record a maximum of 40,000 MP4 movies and photos collectively.

Memory card

	16:9 20.4M
16 GB	1850
32 GB	3800
64 GB	7500

- The number of recordable photos of memory card shown is for the maximum image size of your camcorder. The actual number of recordable photos is displayed on the LCD screen during recording (p. 26).
- The number of recordable photos of memory card may vary depending on the recording conditions.

About handling of your camcorder

Notes

- The unique pixel array of Sony's ClearVid and the image processing system of Sony's BIONZ allows still image resolution equivalent to the sizes described.

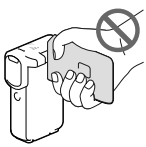
On bit-rate and recording pixels

- The bit-rate, pixels and aspect ratio of each recording mode for movies (movie + audio, etc.)
  - – High definition image quality (HD):
    PS: Max. 28 Mbps 1,920 × 1,080 pixels/16:9
    FX: Max. 24 Mbps 1,920 × 1,080 pixels/16:9
    FH: Approx. 17 Mbps (average) 1,920 × 1,080 pixels/16:9
    HQ: Approx. 9 Mbps (average) 1,440 × 1,080 pixels/16:9
    LP: Approx. 5 Mbps (average) 1,440 × 1,080 pixels/16:9
  - – MP4: Approx. 6 Mbps (average) 1,280 × 720 pixels, 16:9
  - – Standard definition image quality (STD):
    HQ: Approx. 9 Mbps (average) 720 × 480 pixels/16:9, 4:3 (HDR-GW66V/GWP88/GWP88V)/ Approx. 9 Mbps (average) 720 × 576 pixels/16:9, 4:3 (HDR-GW66E/GW66VE/GWP88E/GWP88VE)
- The photo recording pixels and the aspect ratio.
  - – Photo recording mode, Dual capture:
    6,016 × 3,384 dots/16:9
    4,512 × 3,384 dots/4:3
    4,224 × 2,376 dots/16:9
    2,592 × 1,944 dots/4:3
    1,920 × 1,080 dots/16:9
    640 × 480 dots/4:3
  - – iSweep Panorama:
    4,912 × 1,080 dots/[Standard], horizontal
    3,424 × 1,920 dots/[Standard], vertical
    7,152 × 1,080 dots/[Wide], horizontal
    4,912 × 1,920 dots/[Wide], vertical
  - – Capturing a photo from a movie:
    1,920 × 1,080 dots/16:9
    640 × 360 dots/16:9
    640 × 480 dots/4:3

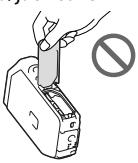
On use and care

- Do not hold the camcorder by the following parts.

LCD Screen



Battery/memory card/jack cover



Stand

- Do not aim at the sun. Doing so might cause your camcorder to malfunction. Take images of the sun only in low light conditions, such as at dusk.
- Use the camcorder in accordance with local regulations.
- Do not use or store the camcorder and accessories in the following locations:
  - – Anywhere extremely hot, cold or humid. Never leave them exposed to temperatures above 60 °C (140 °F), such as under direct sunlight, near heaters or in a car parked in the sun. They may malfunction or become deformed.
  - – Near strong magnetic fields or mechanical vibration. The camcorder may malfunction.
  - – Near strong radio waves or radiation. The camcorder may not be able to record properly.
  - – Near tuner devices such as TVs or radio. Noise may occur.

– On a sandy beach or anywhere dusty. If sand or dust gets in your camcorder, it may malfunction. Sometimes this malfunction cannot be repaired.
– Near windows or outdoors, where the LCD screen or the lens may be exposed to direct sunlight. This damages the inside of the LCD screen.

- For DC or AC operation, use the accessories recommended in these operating instructions.
- If any solid object or liquid gets inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling, disassembling, modifying, physical shock, or impact such as hammering, dropping or stepping on the product. Be particularly careful of the lens.
- Keep the LCD screen closed when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- When disconnecting the power cord (mains lead), pull it by the plug and not the cord.
- Do not damage the power cord (mains lead) such as by placing anything heavy on it.
- Do not use a deformed or damaged battery pack.
- Keep metal contacts clean.
- If the battery electrolytic liquid has leaked:
  – Consult your local authorized Sony service facility.
  – Wash off any liquid that may have contacted your skin.
  – If any liquid gets in your eyes, wash with plenty of water and consult a doctor.

When not using your camcorder for a long time

- To keep your camcorder in optimum state for a long time, turn it on and let it run by recording and playing back images about once a month.
- Use up the battery pack completely before storing it.

Note on the camcorder/battery pack temperature

- When the temperature of the camcorder or battery pack becomes extremely high or extremely low, you may not be able to record or play back on the camcorder, due to the protection features of the camcorder being activated in such situations. In this case, an indicator appears on the LCD screen.

Notes on charging through the USB cable

- Operation with all computers is not assured.
- If you connect the camcorder to a laptop computer that is not connected to a power source, the battery of the laptop computer will continue to use up its charge. Do not leave the camcorder connected to a computer in this manner.
- Charging with a personally assembled computer, with a converted computer, or through a USB hub are not guaranteed. The camcorder may not function correctly depending on the USB device which is used with the computer.
- While the camcorder is connected to your computer, do not turn on, restart, wake up from sleep mode, or shut down the computer. These operations may cause the camcorder to malfunction. Disconnect the camcorder from the computer before you attempt one of these operations.

When the camcorder is connected to a computer or accessories

- Do not try to format the recording media of the camcorder using a computer. If you do so, your camcorder may not operate correctly.
- When connecting the camcorder to another device with communication cables, be sure to insert the connector plug in the correct way.

Pushing the plug forcibly into the terminal will damage the terminal and may result in a malfunction of the camcorder
- When the camcorder is connected to other devices through a USB connection and the power of the camcorder is turned on, do not close the LCD panel. The image data that has been recorded may be lost.

Notes on optional accessories

- We recommend using genuine Sony accessories.
- Genuine Sony accessories may not be available in some countries/regions.

On handling the LCD screen

- If you leave fingerprints, hand cream, etc. on the LCD screen, the coating of the LCD screen will come off easily. Wipe those off as soon as possible.
- If you wipe the LCD screen strongly with a tissue, etc., the coating of the LCD screen may be scratched.
- If the LCD screen becomes dirty with fingerprints or dust, it is recommended that you gently remove those from the screen then clean it with a soft cloth, etc.

LCD screen

- Do not apply excessive pressure on the LCD screen, as it may cause uneven color and other damage.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

To clean the casing and the projector lens (HDR-GWP88/GWP88E/GWP88V/GWP88VE)

- Wipe the casing and the lens gently with a soft cloth such as a cleaning cloth or eyeglass cleaning cloth.
- If the casing and the projector lens is very dirty, clean the camcorder casing and the lens with a soft cloth lightly moistened with water, and then wipe the casing and the projector lens with a dry soft cloth.
- Avoid the following so as not to deform the casing, damage the finish or scratch the lens:
  – Using chemicals such as thinner, benzine, alcohol, chemical cloths, insect repellent, insecticide and sunscreen
  – Handling the camcorder with the above substances on your hands
  – Leaving the camcorder in contact with rubber or vinyl objects for a long period of time

On handling the light-emitting part of flash

If fingerprints or dust make dirty, it is recommended that you use a soft cloth to clean it.

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
  – When there are fingerprints on the lens surface
  – In hot or humid locations
  – When the lens is exposed to salty air such as at the seaside
- Store in a well-ventilated location subject to little dirt or dust.
- To prevent mold, periodically clean the lens as described above.

On charging the pre-installed rechargeable battery

Your camcorder has a pre-installed rechargeable battery to retain the date, time, and other settings even when the LCD screen is closed. The pre-installed rechargeable battery is always charged while your camcorder is connected to the wall outlet (wall socket) via the AC Adaptor or while the battery pack is attached. The rechargeable battery will be fully discharged in about 3 months if you do not use your camcorder at all. Use your camcorder after charging the pre-installed rechargeable battery.
However, even if the pre-installed rechargeable battery is not charged, the camcorder operation will not be affected as long as you are not recording the date.

How to charge the pre-installed rechargeable battery

Connect your camcorder to a wall outlet (wall socket) using the supplied AC Adaptor, and leave it with the LCD screen closed for more than 24 hours.

Note on disposal/transfer of the camcorder (HDR-GWP88/GWP88E/GWP88V/GWP88VE)

Even if you delete all movies and still images, or perform [Format] (p. 48), data on the internal memory may not be completely erased. It is recommended that you select MENU → [Setup] → [Media Settings] → [Format] → [Int. Memory] → [Empty] to prevent the recovery of your data.
Use the supplied AC Adaptor to supply power when you perform [Empty].

Note on disposal/transfer of the memory card

Even if you delete data in the memory card or format the memory card on your camcorder or a computer, you may not delete data from the memory card completely. When you give the memory card to somebody, it is recommended that you delete data completely using data deletion software on a computer. Also, when you dispose of the memory card, it is recommended that you destroy the actual body of the memory card.

Specifications

System

Signal format:
NTSC color, EIA standards (HDR-GW66V/GWP88/GWP88V)
PAL color, CCIR standards (HDR-GW66E/GW66VE/GWP88E/GWP88VE)
HD TV

Movie recording format:
AVCHD (AVCHD format Ver.2.0 compatible):
Video: MPEG-4 AVC/H.264
Audio: Dolby Digital 2ch Dolby Digital Stereo Creator*1

MPEG-2 PS:
Video: MPEG-2 (Video)
Audio: Dolby Digital 2ch Dolby Digital Stereo Creator*1

MP4:
Video: MPEG-4 AVC/H.264
Audio: MPEG-4 AAC-LC 2ch

*1 Manufactured under license from Dolby Laboratories.

Photo file format:
DCF Ver.2.0 Compatible
Exif Ver.2.3 Compatible
MPF Baseline Compatible

Recording media (Movie/Photo):
Internal memory
HDR-GWP88/GWP88E/GWP88V/GWP88VE: 16 GB

"Memory Stick Micro" (Mark2) media
Micro SD card (Class 4 or faster)
The capacity that a user can use:
HDR-GWP88/GWP88E*2: Approx. 15.5 GB
HDR-GWP88V/GWP88VE*3: Approx. 12.5 GB

*2 1 GB equals 1 billion bytes, a portion of which is used for system management and/or application files.

*3 1 GB equals 1 billion bytes, 2.8 GB is used for pre-installed map and another portion is used for data management functions.

Image device:
4.6 mm (1/3.91 type) CMOS sensor
Recording pixels (photo, 16:9):
Max. 20.4 mega (6 016 × 3 384) pixels*4
Gross: Approx. 5 430 000 pixels
Effective (movie, 16:9)*5: Approx. 5 020 000 pixels
Effective (photo, 16:9): Approx. 5 020 000 pixels
Effective (photo, 4:3): Approx. 3 760 000 pixels

Lens:
G lens
10 × (Optical)*5, 17 × (Extended, while recording movies)*6, 120 × (Digital)
F1.8 ~ F3.4
Focal length:
f= 3.2 mm ~ 32.0 mm (5/32 in. ~ 1 5/16 in.)
When converted to a 35 mm still camera
For movies*5: 29.8 mm ~ 298.0 mm (1 3/16 in. ~ 11 3/4 in.) (16:9)
For photos: 29.8 mm ~ 298.0 mm (1 3/16 in. ~ 11 3/4 in.) (16:9)

Color temperature: [Auto], [One Push], [Indoor], [Outdoor]

Minimum illumination:
6 lx (lux) (in default setting, shutter speed 1/60 second (HDR-GW66V/GWP88/GWP88V) or 1/50 second (HDR-GW66E/GW66VE/GWP88E/GWP88VE))
3 lx (lux) ([Low Lux] is set to [On], shutter speed 1/30 second (HDR-GW66V/GWP88/GWP88V) or 1/25 second (HDR-GW66E/GW66VE/GWP88E/GWP88VE))

*4 The unique pixel array of Sony's ClearVid and the image processing system (BIONZ) allow still image resolution equivalent to the sizes described.

*5 [SteadyShot] is set to [Standard] or [Off].

*6 [SteadyShot] is set to [Active].

Input/Output connectors

HDMI OUT jack: HDMI micro connector

Multi/Micro USB Terminal*

* Supports Micro USB compatible devices.

- USB connection is only for output (HDR-GW66E/GW66VE/GWP88E/GWP88VE).

LCD screen

Picture: 7.5 cm (3.0 type, aspect ratio 16:9)

Total number of pixels:
460 800 (960 × 480)

Projector (HDR-GWP88/GWP88E/GWP88V/GWP88VE)

Projection type: DLP

Light source: LED (R/G/B)

Focus: Manual

Throw Distance: 0.5 m (1.6 feet) or over

Contrast ratio: 1500:1

Resolution (output): nHD (640 × 360)

Continuous projection time (when using the supplied battery pack):
Approx. 1 h 10 min.

General

Power requirements: DC 3.6 V (battery pack), DC 5.0 V, 1 300 mA (AC Adaptor)

USB Charging (Multi/Micro USB Terminal): DC 5 V 500 mA/800 mA

Average power consumption:

During camera recording using LCD screen at normal brightness:
HD: 2.2 W MP4: 1.8 W STD: 2.0 W

Operating temperature: –10 °C to +40 °C (14 °F to 104 °F)*

Storage temperature: –20 °C to +60 °C (–4 °F to +140 °F)

* Operation at excessively high or low temperatures is not recommended.

Dimensions (approx.):

HDR-GW66E/GW66V/GW66VE
32.5 mm × 108.5 mm × 70 mm (1 5/16 in. × 4 3/8 in. × 2 7/8 in.) (w/h/d) including the projecting parts
32.5 mm × 108.5 mm × 70 mm (1 5/16 in. × 4 3/8 in. × 2 7/8 in.) (w/h/d) including the projecting parts, and the supplied rechargeable battery pack attached

HDR-GWP88/GWP88E/GWP88V/GWP88VE
40 mm × 108.5 mm × 70 mm (1 5/8 in. × 4 3/8 in. × 2 7/8 in.) (w/h/d) including the projecting parts
40 mm × 108.5 mm × 70 mm (1 5/8 in. × 4 3/8 in. × 2 7/8 in.) (w/h/d) including the projecting parts, and the supplied rechargeable battery pack attached

Mass (approx.):

HDR-GW66E/GW66V/GW66VE
188 g (6.6 oz) main unit only
215 g (7.6 oz) including the supplied rechargeable battery pack

HDR-GWP88/GWP88E/GWP88V/GWP88VE
210 g (7.4 oz) main unit only
235 g (8.3 oz) including the supplied rechargeable battery pack

Water-proof/dust-proof performance:
Equivalent to IEC60529 IP58 (the camcorder is operable up to a waterdepth of 10 m for 60 minutes.)

Shock-proof performance:
Meeting MIL-STD 810F Method 516.5-Shock standards, this product has passed the required tests when dropped from a height of 1.5 m (5 feet) above a 5 cm (2 in.) -thick plywood board (with the LCD screen closed, facing toward the camcorder body).
Water-proof, dust-proof, and shock-proof performance is based on standard testing by Sony.

AC Adaptor AC-UD10/UD11

Power requirements: AC 100 V - 240 V, 50 Hz/60 Hz, 0.2 A

Output voltage: DC 5 V, 1 500 mA

Operating temperature: 0 °C to 40 °C (32 °F to 104 °F)

Storage temperature: –20 °C to +60 °C (–4 °F to +140 °F)

Dimensions:

AC-UD10: Approx. 78 mm × 22 mm × 36 mm (3 1/8 in. × 7/8 in. × 1 7/16 in.) (W/H/D)

AC-UD11: Approx. 70 mm × 33 mm × 36 mm (2 7/8 inches × 1 5/16 inches × 1 7/16 inches) (W/H/D)

Mass:

AC-UD10: Approx. 45 g (1.6 oz)

AC-UD11: Approx. 50 g (1.8 oz)

Rechargeable battery pack NP-BX1

Used battery: Lithium-ion battery

Maximum voltage: DC 4.2 V

Nominal voltage: DC 3.6 V

Maximum charge voltage: DC 4.2 V

Maximum charge current: 1.89 A

Capacity: 4.5 Wh (1 240 mAh)

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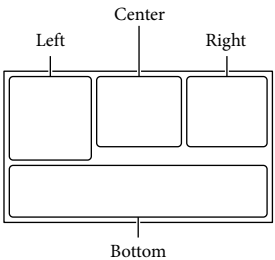
The following indicators appear when you change the settings. See page 26 and 29 also for the indicators that appear during recording or playing.



Left

Indicator	Meaning
MENU	MENU button (45)
	Self-timer recording (47)
	GPS triangulating status (34)
	[Airplane Mode] set to [On]
4:3	Wide Mode (48)
	Fader (47)
	[Face Detection] set to [Off] (47)
	[Smile Shutter] set to [Off] (47)
	Manual focus (47)
	Scene Selection (47)
	White Balance (47)
	SteadyShot off (47)
	Tele Macro (47)
	x.v.Color (48)
	Conversion Lens (47)
	Intelligent Auto (face detection/scene detection/ camera-shake detection/ sound detection) (26)

Center

Indicator	Meaning
	Slideshow Set
SELF-REC	Warning (51)
	Playback mode (29)

Right

Indicator	Meaning
HD 60i HQ MP4 720	Recording image quality (HD/MP4/STD), frame rate (60p/50p/60i/50i), recording mode (PS/FX/FH/HQ/LP) and movie size (32)
	Recording/playback/editing media (22)
0:00:00	Counter (hour:minute:second)
00min	Estimated recording remaining time
16:9 L 20.4M	Photo size
101	Playback folder
100/112	Current playing movie or photo/Number of total recorded movies or photos
	Touch pad deactivated

Bottom

Indicator	Meaning
	[Micref Level] low (48)
	[Wind Noise Reduct.] (48)
	Blt-in Zoom Mic (48)
	Low Lux (47)
	Spot Meter/Fcs (47)/Spot Meter (47)/ Exposure (47)
iAUTO	Intelligent Auto (26)
101-0005	Data file name
	Protect (48)
	Flash (47)/Red Eye Reduction (47)

- Indicators and their positions are approximate and may differ from what you actually see.
- Some indicators may not appear, depending on your camcorder model.

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HANDYCAM

GB

Additional information on this product and answers to frequently asked questions can be found at our Customer Support Website.

http://www.sony.net/

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